Volume 2
Number 9
February 1989
£1.95

A Database Publication

AMIGA COMPUTING



Fly into fantasy F-29

WRITE better Basic with HiSoft's Extend

BLOW your mind with Minter's Trip-a-Tron

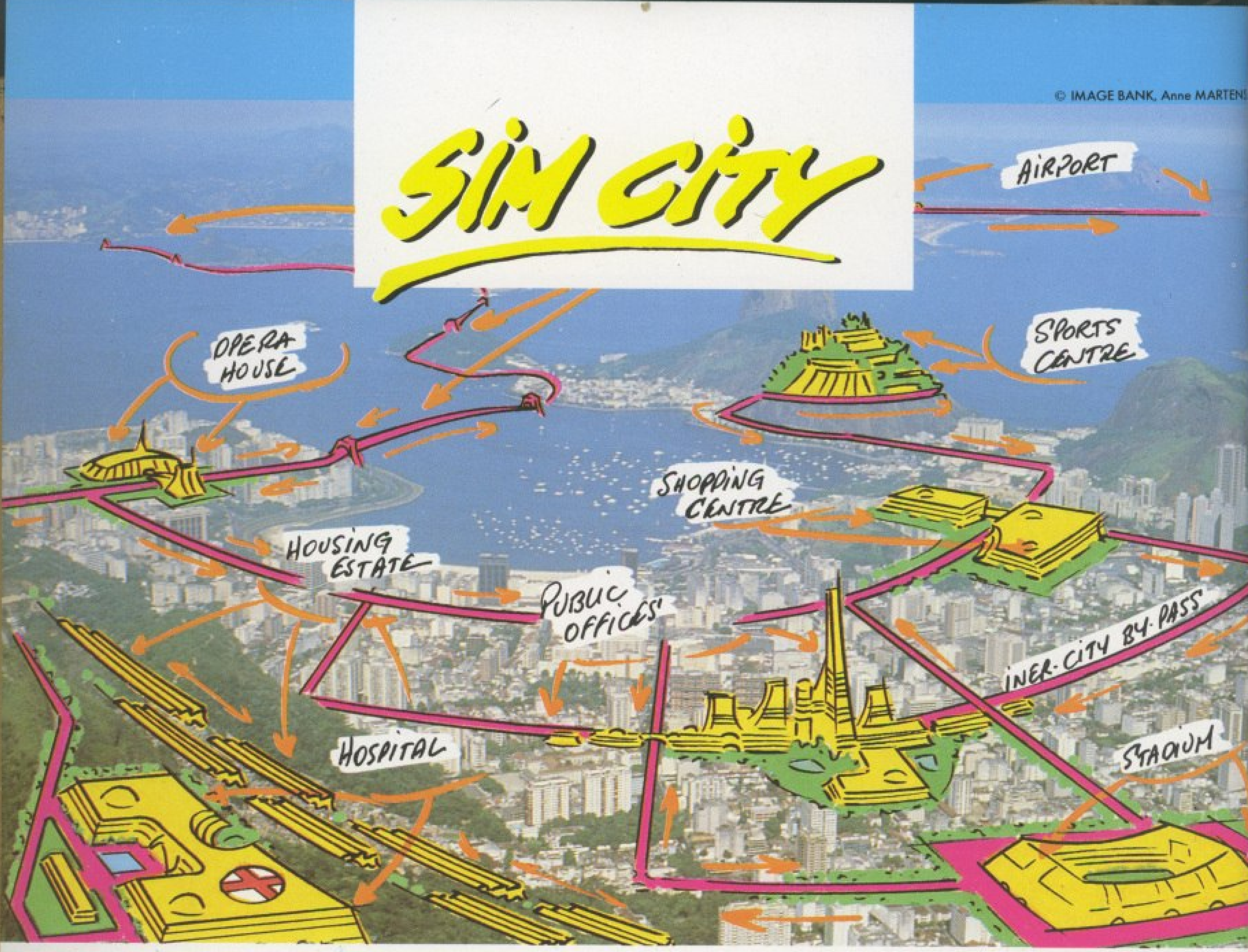
BASH the metal with dirty assembler

DTP
VIDEO
WORDPRO
DATABASES
SPREADSHEETS
GRAPHICS
MUSIC

EXPLORE YOUR AMIGA

The complete guide for ALL users

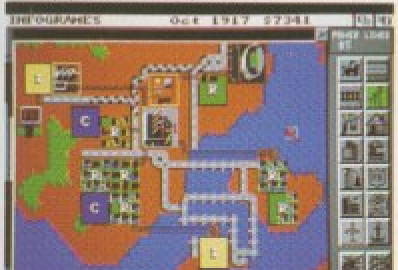
FREE with this issue

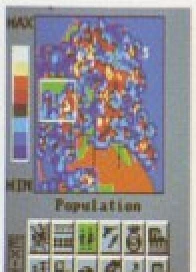


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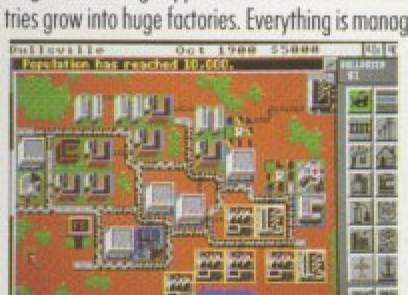
RIO DE JANEIRO 2019.

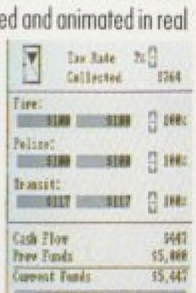
On seeing the crumbling estates, out-dated roads and rusty bridges of your city, how many times have you said "Put me in charge for a day and I'll make this wretched thing work!"
Now, with Sim City, take the destiny of the world's greatest cities in hand. Or take charge of a new evolving and growing city. Become both mayor and city planner of a dynamic real-time simulation.





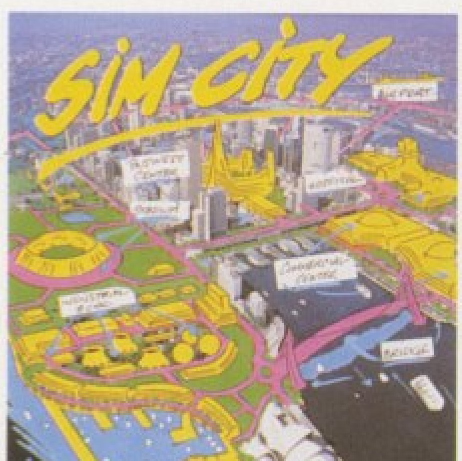
Build houses, streets, factories, airports, a stadium, or even nuclear power plants. Organise urban transport, hire police, firemen, bulldoze entire neighbourhoods.
Raise and collect taxes, balance your budget, manipulate property values. Sim City is alive. It's loaded with animation and detailed sound effects. Build roads, cars appears. Lay tracks, trains go. Build an airport, planes fly. Neighbourhoods go upper-class. Areas deteriorate into slums. Small industries grow into huge factories. Everything is managed and animated in real

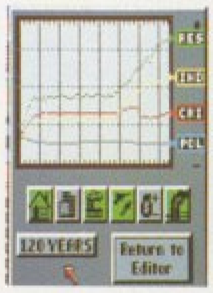




SIM CITY

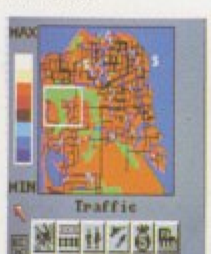
What you should know about the game of the year.







time. Every decision instantly influences the life of your town.
In a special mode, you can even cause tornadoes, floods, fires and other disasters at your whim. Save San Francisco from the great earthquake of 1906. Or save Tokyo of pollution and from his famous B-movie monster. Sim City is an all-absorbing unique game which contains 8 pre-defined scenarios : e.g San Francisco, Tokyo, Rio de Janeiro... With it's exceptional depth of play, it's still simple to play with icons and graphics, without text commands.





Design and build the city of your dreams. Sim City gives you the keys. The rest is up to you.

INFOWORLD Volume II Issue 20 : "People playing Sim City are completely plugged into the world they create, disappearing for hours."
NEW YORK TIMES : "The model is very sophisticated, yet understandable. And just as important, it's fun, too."

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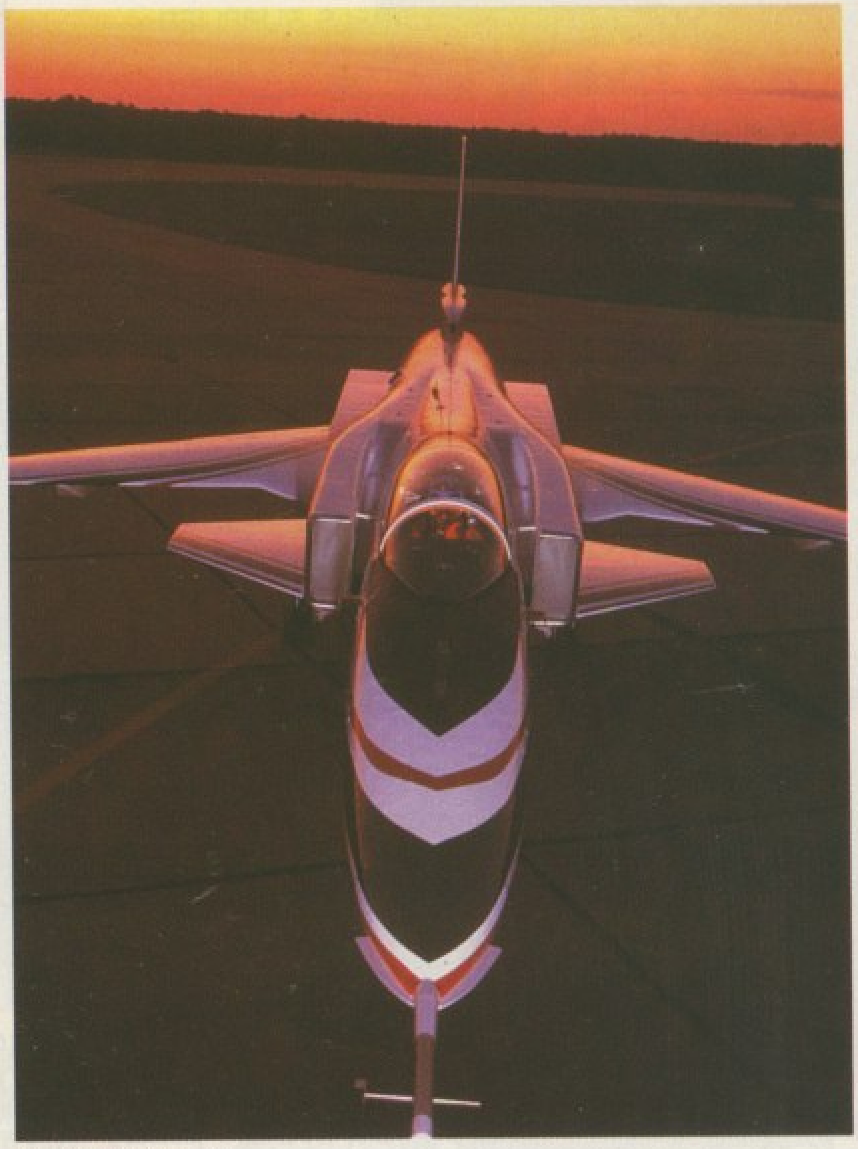
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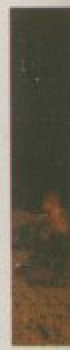


Step into F29 technology



You and your Amiga can make beautiful music together

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GAME KILLER

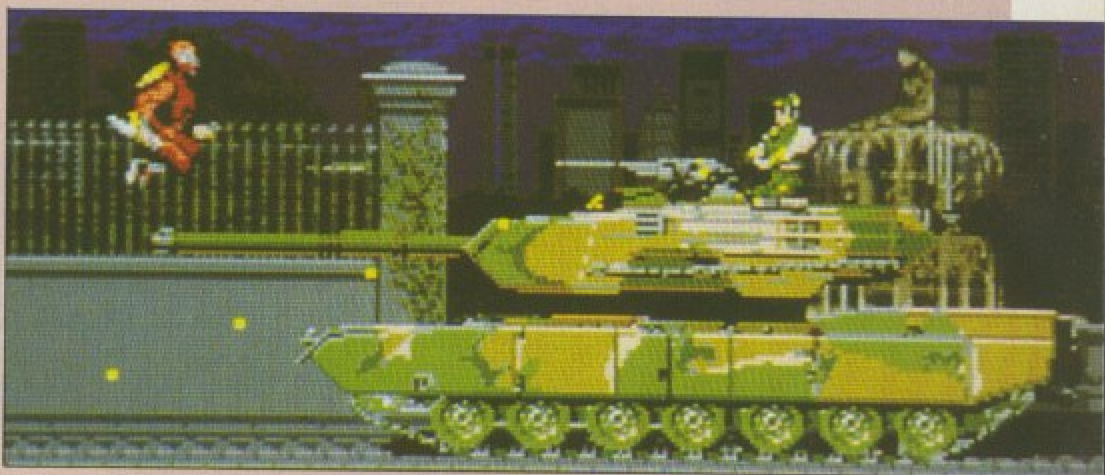


SOFTWAR

LETTERS



GAMES REVIEWS



Ninja Warriors ... great sound, action and fun – Page 18

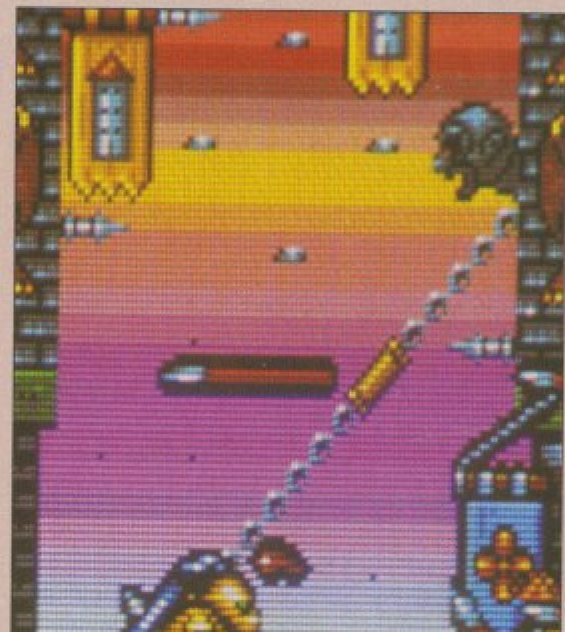


North and South where General Lee learns to flee – Page 26

- Quartz. It'll knock your clocks off
- Hole in one. Enough to fill the Albert Hall
- US Gold get it right on Outrun second lap
- You can pull a bird with the Eye of Horus
- Take on aliens in Xenophobe. And win
- Clown 'o Mania for those who juggle balls
- Michael Jackson in Moonwalker fantasy
- Pictionary draws a blank scorecard

Plus

- Plus, Lancaster, Star Command, Dragonscape,
- Roller Coaster Rumbler, Rally Cross Challenge,
- Dragon Spirit, Magic Marble, Slayer, Kelly X,
- Speedboat Assassins, Mindbender, Switchblade,
- Shufflepuck Cafe, Toobin, Manic Mansion, Keef the Thief, and Ghostbusters II.



Enter the Onslaught, violence with intellect – Page 24

AMIGA SCENE

One meg A500 on the cards?

COMMODORE often makes running changes to the design of the Amiga. This gives them flexibility in the choice of suppliers and gives room for making savings on cost or improvements.

The latest version of the A500 circuit board indicates we may soon see the A500 with a megabyte of ram as standard. By using the same type of high capacity ram chips used in the A590 new A500s have fewer chips and sockets on the board to add more to bring the capacity up to 1 meg.

The upgrade will have to be fitted by an approved dealer to maintain the warranty but it should be a cheaper way to upgrade than fitting an A501 type expansion in the trapdoor.

As standard, the machine will work with an A501 and this is probably still the best expansion method, since the new Amigas do not have a battery backed up clock. It is not possible to use both kinds of upgrade.

The new board Amigas feature the Enhanced Chip Set version of the Agnus chip. Its sister – Denise – is still in prototype form. The ECS Agnus, known variously as Fang2, Fatter Agnus, Obese Agnus and American Tourist, offers a US style 400 line display which fills the screen and one meg of chip ram.

Obviously you need the extra 512k to use this feature, so a standard A500 is set to give only half a meg of chip memory. Your dealer can change this by cutting a track and fitting the chips.

The ECS Agnus and sockets on the board both point to Commodore selling a 1meg machine.

The only thing preventing this from happening is the price of the chips. Steve Franklin, MD of Commodore UK, said that this will happen when Commodore can produce the machine and still sell it for £399.

Eight shows in a month!

THE globe-trotting Amiga lover could have spent the whole of November going to shows. Commodore's star popped up at AmiExpo '89 in Cologne, Comdex in Las Vegas, The Computer Shopper Show at Alexandra Palace, the Commodore Christmas Show at the Hammersmith Novotel, Computer Graphics '89 again at Ally Pally, the Scottish Computer Show, The Italian Enigma Show and the Dec User Show.

Most exciting of these was the Cologne (Köln to the Germans) show, organised by the American companies responsible for the successful US shows.

With more Amigas than any other country the German event was bound to be a success, but no one could have guessed quite how successful.

More than 11,000 people arrived on the first day, taking everyone there a bit by surprise and totally filling the hall, which was suddenly looking a bit small. At certain points during the day the guards had to stop people from entering as a safety precaution. Next day the attendance figure was up to 20,000



Mega memory..Sony's optical disc drive

The only people not complaining about the cramped conditions were the box-shifters – one German dealer managed to sell over thirty 68030 boards in the first day. Deutschemarks were flowing as the faithful bought anything on offer.

Commodore didn't have much new to offer, as speculation of an early glimpse at the A3000 proved unfounded.

The show had an overall professional bias, with business slightly outnumbering the games stands. Most exhibitors were German, Scandanavian or from the States. Disappointingly there was hardly any British representation.

Hopefully next time round the organisers will have a larger venue and more UK companies will realise that Germany is in the same continent.

Those commentators who expected to see the Amiga 3000 launched at Comdex were as disappointed as they were 1ll informed. The 5.4 version of Unix which will be sold with the A3000 has not been finished yet. It will then have to be ported to the Amiga and tested.

Commodore did launch a range of new products. The A2630 card has four meg of ram, a 68030 and a 68882 maths co-processor. Since the 68030 has the memory management circuitry necessary for Unix on the chip there is no need for a 68551 and Commodore's press release was wrong in claiming the card has one.

The current A2620 is sold in the US bundled with an Amiga in the guise of an A2500. Since this is just a marketing stratagem it is unlikely we'll see the new board in the A2500/30 which was launched at the show.

We will see the card, although when and at what price is yet to be determined. If other cards are a guide we'll see £1=$1. And at $2,195 that is on a bit more than Atari's nearest rival, the TT.

Direct Digital Distribution (0708 754704) used the Computer Shopper show to debut its optical disc drive and interface for the Amiga 500. This uses a combination of lasers and magnets to read, write and magnetically erase optical discs. Each disc holds 650 megabytes and they are ➤

VirusX 4.0 arrives

STEVE Tibbett swore Amiga Computing to secrecy over the new release of the best of the virusbusters. But now it is public knowledge we can break the news that the update to VirusX3.2 is called version 4.0, not as some people have reported 3.4.

The program can cope with several new viruses including four of the newer non-bootblock type. These are IRQ, RLamer, BGS-9 and Xeno. All the Viruses can be detected on disc and in ram. This is a major update and all Amiga owners should contact a PD library and get a copy.

The word is PROTEXT...

Britain's favourite home-grown word processor has now been joined by Prodata, the Arnor database

"Protext - the real joy comes only from using it. I can say without any fear of contradiction it is the best word processor available at the price, in my view, at any price in fact." **AUI 3/89**

"Protext really is the best text processor on the Amiga" **ST/AMIGA FORMAT 2/89**

"Wins hands down as the all round package" **ST USER 8/88**

"I couldn't be more impressed" ...

"So a big thanks to Arnor for writing a brilliant piece of software" **COMPUTER SHOPPER**

PROTEXT is now Britain's fastest selling Word Processor on Atari ST and Amiga computers, and is used by many of the leading computer publications and journalists, as well as thousands of businesses.

Protext's powerful features include:-

- fast spell checker with 70000 word English dictionary.
- background printing. You can print and type at the same time.
- box manipuation. Columns can be moved around on the screen.
- macro recording. Any key sequence can be assigned to a single key.
- use of foreign languages
- headers, footers and footnotes
- flexible configuration program
- comprehensive set of printer drivers
- wysiwyg ('what you see is what you get') display shows bold, underlining and italics on the screen.
- two file editing. You can edit two documents at the same time.
- find and replace. Powerful search facility.
- mail merging. The most comprehensive mail merging facilities available in any program.
- 300 page manual with full index.
- Swedish version also available. French and German coming soon.

Protext was awarded the "Best Buy" accolade in *PC Buyers Guide*, and was given a bottom line verdict of 5 stars in *What Personal Computer?*

"Protext is probably the most powerful word processor on the Atari ST" **ST USER 4/88**

"the best value for money in word processing on the Amiga" **AUI 9/89**

"Protext deserves to be the system by which all other word processors are judged ... Arnor has given the market a superb product" **YOUR COMPUTER**

"Arnor's Protext 4 is just about unbeatable ... this really is an excellent program" **PC AMSTRAD**

Protext ... truly the professional's choice

Just some of the features of Prodata:-

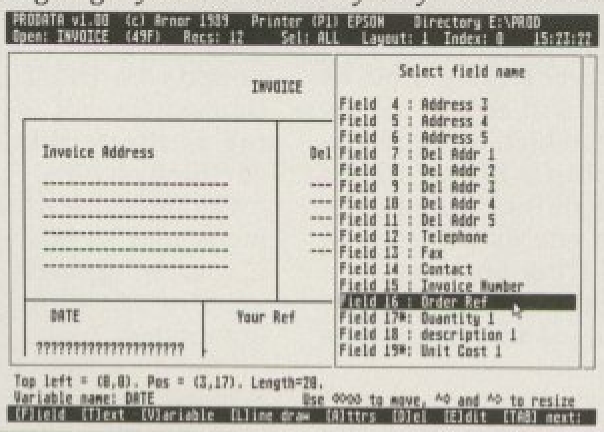
- Multiple indexes for accessing data
- Full editing facilities for data
- Comprehensive printing options
- Importing and exporting
- Undo changes facility
- Powerful filtering feature
- Easy to use layout design
- Password protection (5 levels)

And of course, Prodata is fully compatible with Protext.

Amiga owners please note that you need 1MB to run Prodata - see below for special price for Prodata plus A501 (512K memory + clock expansion)

PRODATA

"Designing layouts is incredibly easy" **YOUR AMIGA**



"Totally menu driven, Prodata must rank among the top database systems..." **ST USER 12/89**

"Prodata is a very sophisticated database package, and at £79.95, it is most certainly worth the money" **YOUR AMIGA 12/89**

"Arnor have a quality product at a very reasonable price" **POP COMP WEEKLY 19/10/89**

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Please send me (indicate where applicable):

_____	PROTEXT v4.2	@ £99.95
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_____	Further information	_____ Protext demo disc

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interchangeable. The speed compares with a slow hard drive but has the advantage that the discs are removeable. The unit is made by Sony and uses what looks like 5.25 inch compact discs in a plastic case. Each disc costs £380 and the drive £4,000.

Also launched at the show were a new multi-port card and the A2091 hard disc controller which uses the same chip as the A590 and has room for 2 meg of ram. At $399 without the memory or drive this seems expensive ,but is likely to be discounted when it arrives in the near future.

The Amiga Centre Scotland (031–557 4242) was at Computer Graphics '89 with its new 32 bit frame buffer. This looks great, but the human eye can't resolve more than the 16 million colours that a 24 bit card gives. The other eight bits are used for information which can be hooked into video mixer.

Reaction at the show has lead to the decision that the card will be genlockable and low priced. That means less than £1,000.

The Novotel may have witnessed the first show Commodore has run itself but little changed – the same faces manning the same stands, albeit with some welcome additions.

Selling 100,000 copies of any program will make a software house like you and that is exactly how many Batman packs Commodore expected to shift at Christmas. Good news not only for Amiga owners but also for Electronic Arts which has Deluxe Paint II and Interceptor in the pack, and Ocean which will see the boost to sales benefit Batman and New Zealand Story.

Both companies were at the show "to support Commodore", Ocean doing some great half-price deals on latest releases as well as giving out posters and stickers.

This was principally a chance to buy Christmas presents, so you wouldn't have expected many new products. One exception was Trip-a-tron, Jeff Minter's first soiree into Amigadom. The light synthesiser, which makes your mind take off when you put a CD on, has been long awaited by Minter maniacs and sold well even on the pleasantly uncrowded first day. See the full review in this issue.

Bytes and Pieces was doing some great deals on big hard drives and showed an early version of AmigaDos 1.4. This had the new boot-up sequence but none of the fabby 3d icons.

The very fastest hard disc interface is HardFrame from Microbiotics in Texas. UK sales are handled by Oasis, busy answering every question possible thanks to the presence of the designers and marketing people over from the US. It isn't the cheapest and only works on an Amiga 2000, but it is the best.

The best selling item on the first day seemed to be a £1.99 pack of three paper aeroplanes from the Hamleys stand. Mindscape and Mirrorsoft seemed to have mastered the art of getting them to loop the loop.

The Christmas spirit of giving was represented by a balloon race in aid of Capital Radio's Help-A-London-Child – a chance to win an A500, or a trip in a hot air balloon. Despite the fetching Biggles outfit Caroline from Commodore said she didn't fancy a trip in a wicker basket.

Commodore put on a good show with Amigas, Music-X, midi instruments and some great sax playing.

But most of all the show was about bargain hunting. The prices of half meg ram expansions and second disc drives tumbled. The going rate for 512k with a clock was £65. Disc drives could be bought for the same sum. Printers were savagely discounted. If fact the only thing which seems over–priced was the food at the bar. No, little changed at Commodore's first all-Commodore show.

Fun for the kinder, too

DATABASE Software (0625 859333) has produced a German version of its top selling Amiga educational package Fun School 2. Cross format sales currently stand at 60,000 and Fun School is expected to top the 100,000 mark by the Spring, according to marketing director Chris Payne.

Fun School 2 comes in three age defined sections for children under six; six to eight; eight and over. It was designed by teachers to combine entertainment with a wide range of early learning skills.

Bonus buy

ELECTRICIAN Michael Graham (24) from Dover-by-Cockermouth, Cumbria won himself a £500 video recorder when he bought the 500,000th copy of Mini Office, the small business package from Database Software (0625 878888).

"I couldn't be more pleased both with Mini Office and the unexpected bonus that went with it", he said.

Law lore goes online

RECENT Department of Industry statistics show that the need to comply with employment law costs the average company more than £5,000 a year. Where health and safety laws are concerned this can be as much as £13,500.

The best way to avoid these high costs is to get good advice on the relevant legislation and that is now available to computer users through the MicroLink communications service (0527 28515).

This new facility has been launched by MicroLink in conjunction with professional consultant Premier Employment Services which gives specialist advice on personnel and health and safety law 24 hours a day, 365 days a year.

"Making such a service available to subscribers minimises the risk for management", said MicroLink's head of marketing, Martin Turner. "Instead of going through the lengthy legal process, subscribers to MicroLink can now consult their computer ". The charge is £3 for each inquiry.

Disc or discount

REGULAR readers may think we've made a tiny mistake this month and missed the disc off the cover. We haven't. Made a mistake that is. We have left the disc off, but it is deliberate.

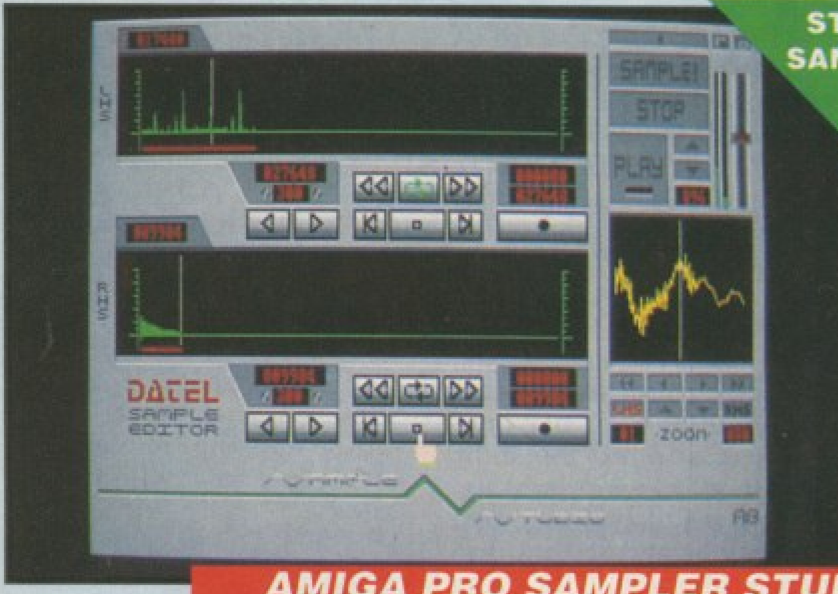
After a lot of discussions with readers, and the results of the survey in the disc pages, we decided that a magazine should be a means of education and entertainment, not just a source of cheap software. So we have reverted to the proven formula of doing what we are good at and not pretending to be a software house.

With the disc we successfully avoided the approach of charging a software house for a demo, half-filling the cracks with the first PD program which came to hand and then hiking the price. We like to think we gave you a genuinely useful disc which you would keep, rather than one you would format after half an hour.

Without the disc we have been able to bring the price of the magazine down to £1.95. We are also able to devote time to things like the free booklet on this month's cover. More people, especially users new to the Amiga, will be able to enjoy the benefits of the best Amiga magazine.

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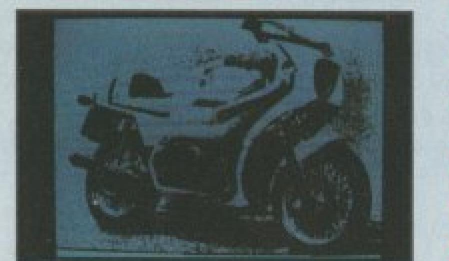


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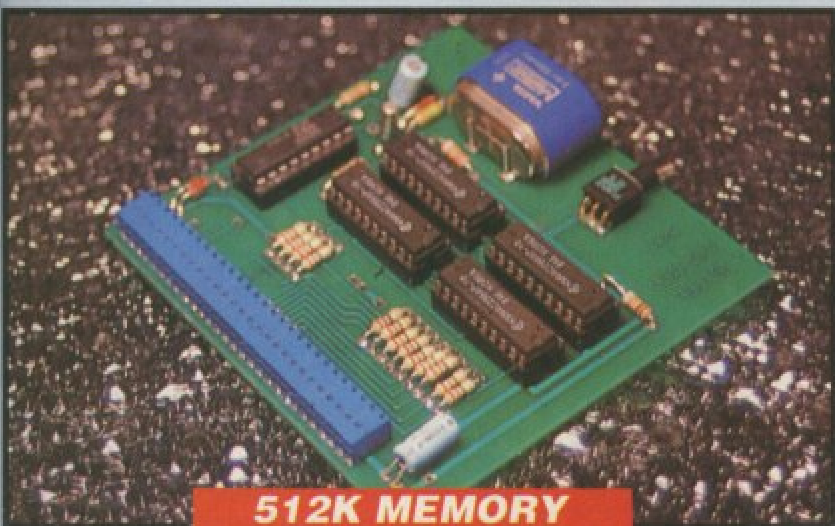
ONLY £129.99 TWIN DRIVE
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- Switch in/out of external drives.
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- Package includes GS4500 scanner, Interface & Scan Edit software.
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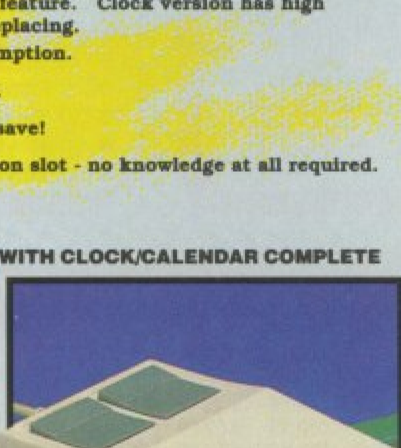


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Amiga Arcade

Arcana smashes back with style

MAX TAYLOR is clearly a resilient man. His company, Arcana Software, hasn't released a game for over a year, thanks mainly to the aborted Mars Cops project. But with a new sales and PR deal with Active Sales and Marketing, it looks like 1990 is going to be the year that Arcana at last gets back to producing high quality software.

Seeing the new year in with a bang is Rotor, a strategy shoot-'em-up coded by Danish programming team Systematics. Written on the Amiga with eight-way scrolling in 32 colours, Rotor has gameplay which is a mixture of Thrust and Oids with a dash of Cosmic Pirate.



Rotor – 32 colours, eight-way scrolling, 50 frames a second

"It runs at 50 frames per second," said Max Taylor.

"We don't believe it," said *Amiga Arcade*.

"Nor did I," said Max Taylor. "Until I saw it."

And neither did we until we saw the demo Max sent us. The colours are all there, the scrolling is all there, and it's smooth – smooth enough for us not to argue about the 50 frames per second claim.

Rotor uses the Amiga the way it was built to be used, which has caused great problems with the ST conversion. Because of this the game won't be ready for review until after this issue goes to press – there'll be no reviews of demos in *this* magazine!

REVIEWED

93% Ninja Warriors
90% North & South
89% Onslaught
89% Shufflepuck Cafe
87% Maniac Mansion
82% Quartz
81% Hole in One
81% Mindbender
79% Switchblade
77% Clown-o-mania
77% Moonwalker
72% Dragonscape
72% Star Command
71% Eye of Horus
70% Turbo Outrun
70% Xenophobe
69% Keef the Thief
69% Magic Marble
68% Ghostbusters II
63% Rally Cross Challenge
62% Toobin'
61% Roller Coaster Rumbler
58% Speedboat Assassins
53% Lancaster
49% Dragon Spirit
32% Slayer
23% Kelly X
5% Pictionary

To boldly go...

STARFLIGHT from Electronic Arts is a big game. It'll come as no surprise to you to learn, then, that Starflight is a fantasy role-playing game.

The year is 4619 and your mission is to find colonisable worlds, gather minerals, ancient artefacts and learn the secrets of alien races.

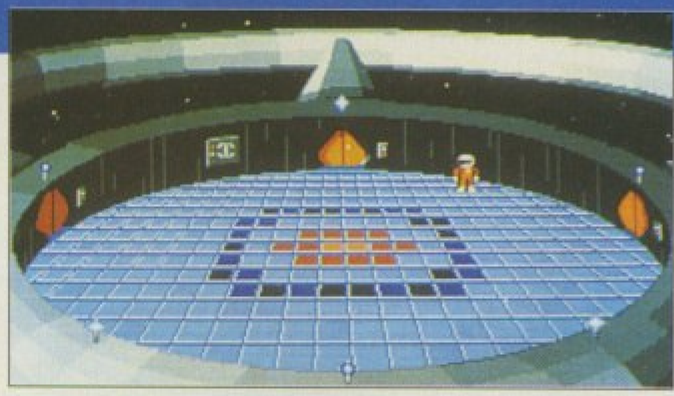
Not exactly an original storyline, but what Starflight lacks in plot it makes up for in size – 270 star systems and 800 planets, each with almost two million locations. It all adds up to over one-and-a- half *billion* locations to be explored throughout the galaxy.

Along the way you'll encounter giant gas planets, ice planets, lava planets, rock worlds and ocean worlds.

Navigation is aided by a detailed starmap, and no matter what planet you orbit, vital statistics flash on the screen to inform you what lies ahead – atmosphere, mass of plant, hydrosphere, lithosphere, temperature and global weather.

Your starship is well endowed with lasers, missiles, shields and armour, but you have been warned only to use violence as a last resort. Communication is the key to the game.

If it's not in the shops now, it should be very soon, priced £24.99.



Stone me looks like we've been burgled

Pogo's got all his bits

NEBULUS was very pretty on 16 bit, but it was an 8 bit game at heart and it showed. It was not a Hewson success. Now the original programmer is collaborating with German programming team Infernal Byte Systems to produce the sequel, Nebulus II.

Pogo returns in his adventure through Nor, travelling from island to island, climbing, leaping and jumping up and down the 16 revolving towers. Expect to see him late spring.

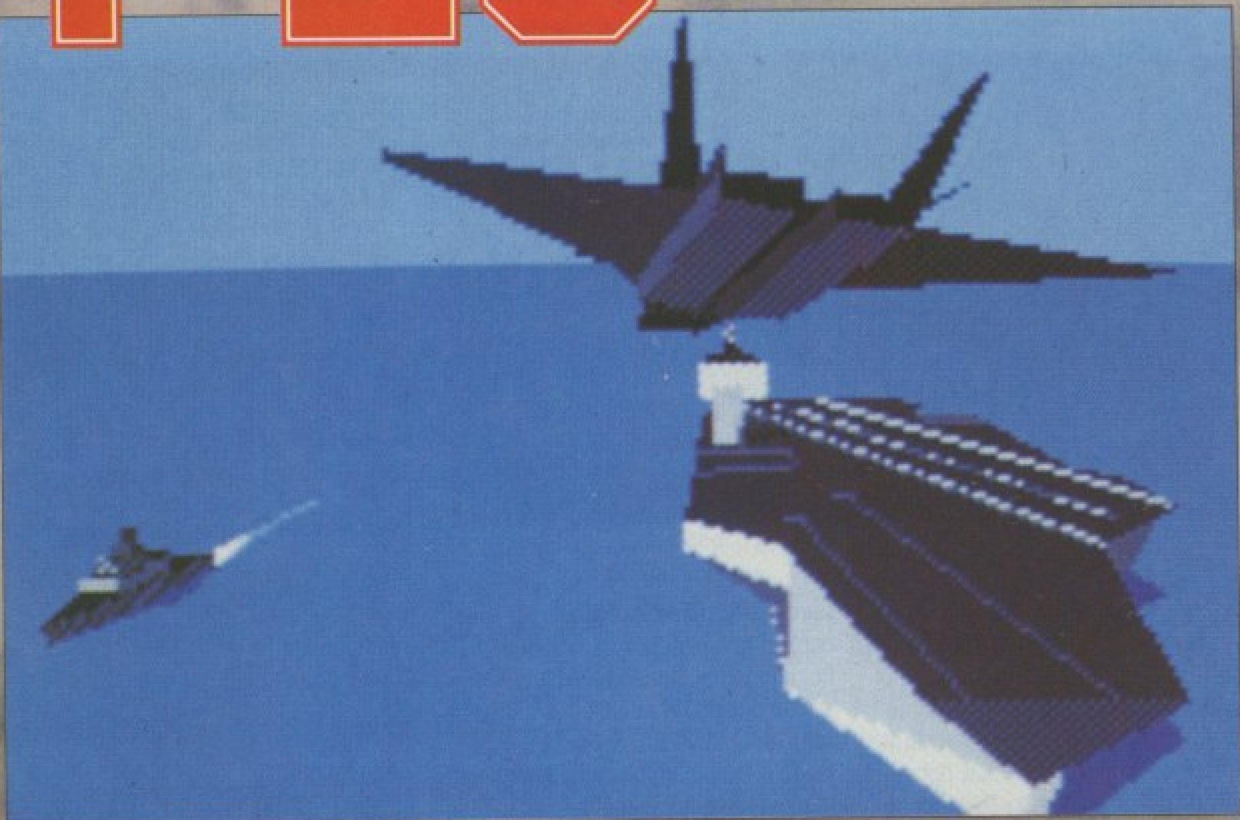


Pogo does something with mines in this early mock-up screenshot of Nebulus 2

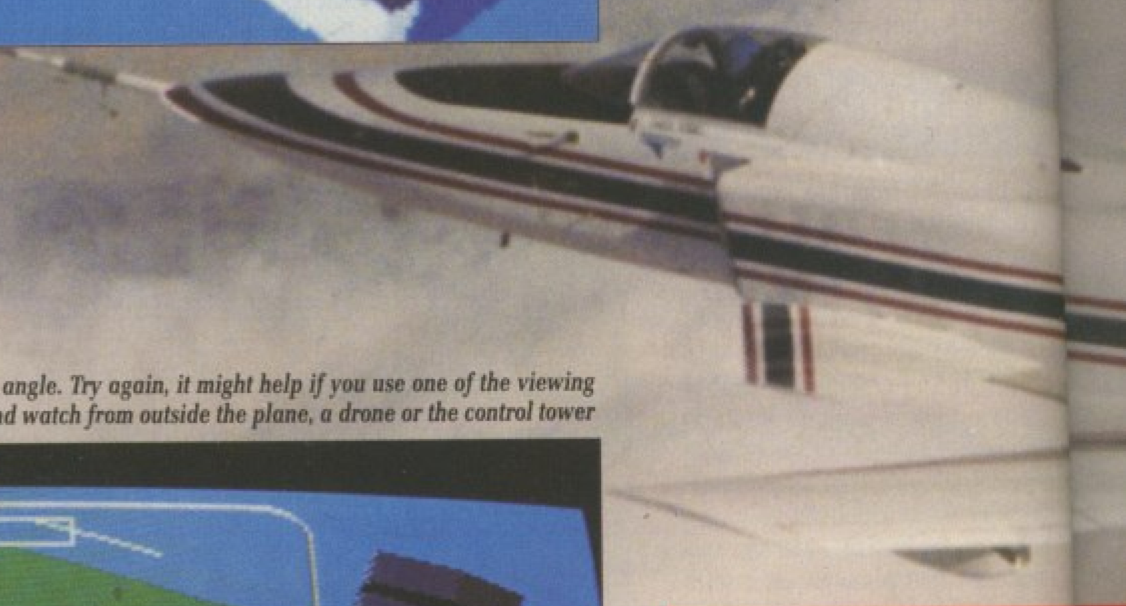
Gallup Chart

		Last Month
1	Xenon 2 Imageworks £24.95	1
2	Batman - The Movie Ocean £24.95	NE
3	Shadow of the Beast Psygnosis £34.95	RE
4	Kick Off Anco £19.99	8
5	Stunt Car Racer MicroStyle £24.95	NE
6	Beach Volley Ocean £19.99	NE
7	Altered Beast Activision £24.99	NE
8	Robocop Ocean £19.99	7
9	Falcon Spectrum Holobyte £29.95	NE
10	Bloodwych Imageworks £24.99	4

F-29 RETALIATOR



There's no time for naval contemplation. Guarding the ships is a tough job but someone has to do it. The multi-coloured wake looks really good



You'll never land at that angle. Try again, it might help if you use one of the viewing options and watch from outside the plane, a drone or the control tower



The E-COP study for cockpit design has been used as the basis for the control panel in F-29. This uses selectable displays called up on small VDUs. Options include a state-of-the-art moving map, navigation and weapons information and an old-fashioned slow-scan radar "because it looks pretty".

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The game

KEEPING up with technology makes the flight-sim writer's life a hard one. So why bother? F-29 Retaliator is a flight into fantasy. It puts you in control of one of the next generation of jet fighters, armed with futuristic weapons.

If you find working out which button to push to close the canopy hard work, you have no chance when it comes to completing 99 missions. For this reason F-29 concentrates on the action instead of trying to accurately mimic the pitch, yaw, rate of climb and roll rates that an out-and-out simulator like Sub Logic's Jet replicates.

Still, F-29 is no simple Afterburner – if it moves shoot it –

PREVIEW



The coders

OCEAN has found the right people to write the program. Phil Allsop, Russell Payne and Martin Wright wrote Amiga and ST Falcon for Spectrum Holobyte. Anyone who has anything to do with the promotion of Falcon may have given the impression that the program was written in the US of A, but Runcorn is a more accurate location.

The team has some other games pending. Russell and Martin wrote Flight of the Intruder, which will be out soon from Spectrum Holobyte. Phil – the lead programmer – has many 8 bit titles to his credit and a couple of 16 bit things, including Road Wars and Mayday Squad.

Being local means that the programmers can pop into Manchester to visit Ocean, a significant help with a project of this complexity.

Martin Wright: "F-29 is our toughest project yet."



The plane

SET in the future, F-29 Retaliator uses two planes which are still in development, designed not to be the next generation of fighter aircraft but the one after that. They are the Lockheed F-22, which is still so secret no one outside the Pentagon (or the Kremlin) has seen a photo of it, and the Grumman X-29. The X stands for experimental. In service the name will be changed to F-29. Hence the name of the game.

The F-29 is tomorrow's fighter. It has swept forward wings, which give better rates of turn and roll characteristics than normal wings. The controls are fly-by-wire, which means a computer looks after little problems like stalls. The X-29 has itty bitty wings at the front called canards which make a stall less likely.

All fascinating stuff to plane buffs. To the rest of us it means that the thing should feel like a cross between Interceptor and Falcon, and it should turn better and be easier to fly. It does and it is.

arcade game. The program is something of a departure for Ocean. King of 8 bit software, it has realised that the Amiga demands a more mature approach, with more sophisticated software.

You are taking part in a war. There are fronts which show where opposing forces are dug in. The three scenarios, including one sea-based one, are based on maps of real places.

The actual data came from Cheyenne Mountain in the American Mid-West and has rivers which skimander and roads which join towns. This gets away from the artificial feel of ruler-straight roads and pyramid mountains which dog earlier games. The missions reflect the multi-role capabilities of the aircraft, escorting carriers, saving your installations from attack and taking out the odd enemy missile installation. Calling it a SAM-7 might imply xenophobia and taking sides which would result in the game being banned in the peace loving country of Germany.

As with Falcon you can choose a rank, which affects the amount of skill you need to play the game. There are lots of options, so a Zulu alert acts as a quick set-up.

For advanced missions you'll have to choose the right weapon for the job. In keeping with the theme of the game, they are a futuristic lot from the Pentagon shopping list of the future and include the Backwinder – a sidewinder which you launch rearwards at pursuers. Dogfights are fun, and you have a machine gun for those close at hand manoeuvres.

The feel of flying has been captured with graphic stipple effects which make the plane and landscape more realistic than the slab of colour style of F/A-18 Interceptor. The drawing speed of 360 polygons per second allows a screen refresh rate of up to 12 frames per second.

Controls vary from a very-easy-to-fly mouse option to a more realistic keyboard selection. Making any plane, let alone a fundamentally unstable fast jet, fly straight and level is a skill which takes years to master. Ocean has made things a good deal easier with heavy damping on the roll and by giving the plane a natural tendency to fly upright. In the mouse-mode it won't even loop the loop.

This allows you to concentrate on the problem in hand – fighting the war, and winning.

Ocean certainly has a stiff battle on its hands with Activision's Bomber, Digital Integration's F-16 Combat Pilot and Electronic Art's forthcoming F-117a Aggressor all lined up to fight it out. Ocean clearly has the game to do the job.

NINJA WARRIORS

He's called in the National Guard!

HOW many ninjas have you ever seen? No, really. I mean, I always considered Tooting to be fairly multi-racial but I don't think I've ever seen a ninja washing his smalls in the launderette or having a quick pastie and chips in The Dolphin.

The point being that seeing as they seem to represent the ultimate in covert operations as witnessed by the plethora of ninja games, you never see them about.

Maybe that's because they're so good at sneaking around or something, but even *they* must have to nip down the Spar for a pack of fags every now and then, surely?

Anyway this is all irrelevant.

The sheet-garbed assassin of drug barons' nightmares is back, and this time he hasn't brought anything with him at all apart from a couple of sharp knives and a few shüriken.

The evil Bangler, notorious dictator, gangland chief, pop group (no, not really) and fat old Sun reader has succeeded in becoming president. He now has the army and police at his control. The rebel heroes have constructed two robotic ninja assassins to track him down to his mansion and deliver rough justice.

At first you may be wondering why you have been transferred to the land of cinemascope because there are large tracts of black space above and below the play area.

Ah, but this is in fact a cunning ploy. If you ever ventured into one of those devil's armpits called arcades you will have noticed that Ninja runs on three screens to give a panoramic view.

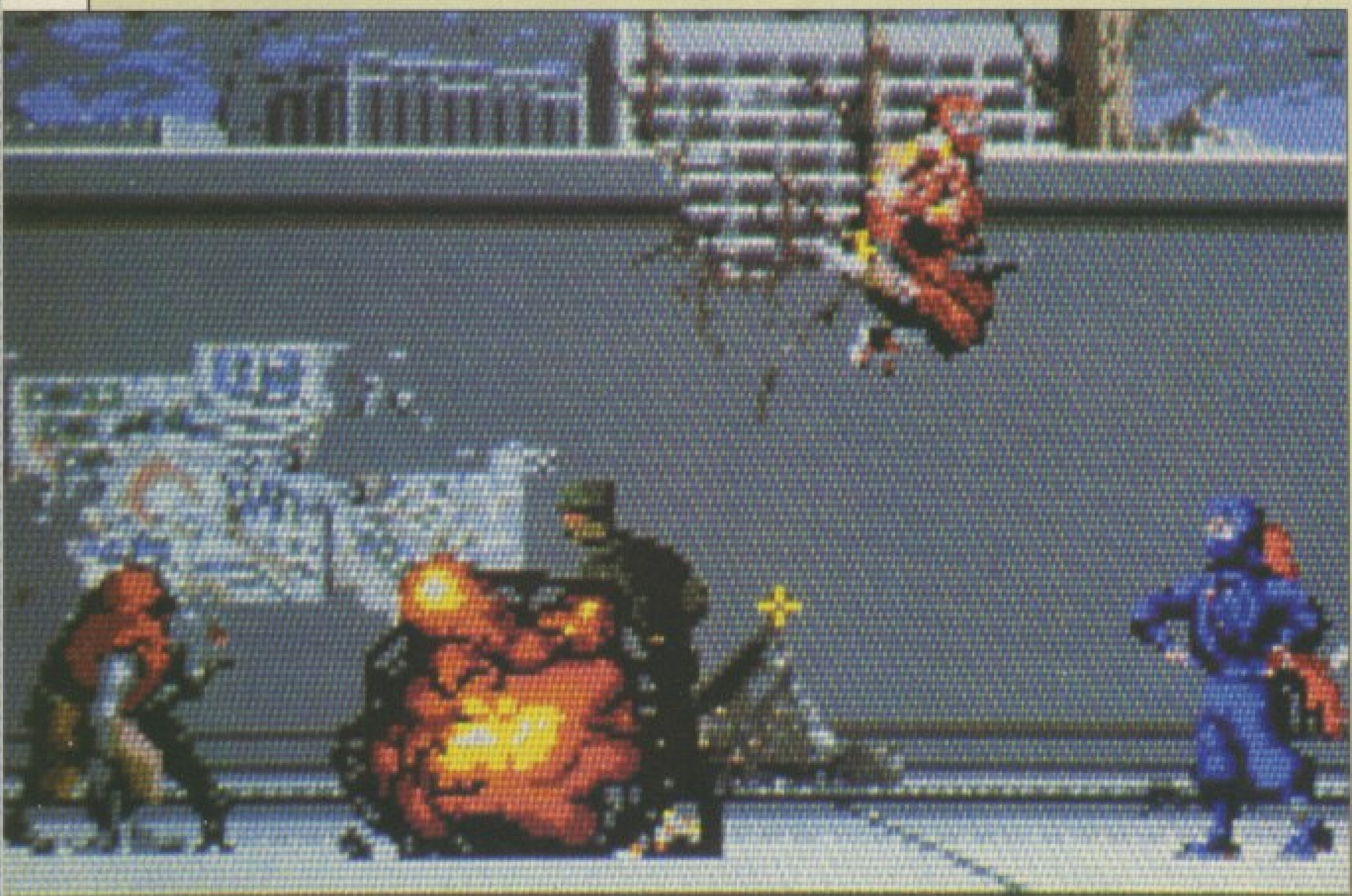
In order to simulate all three screens properly, the programmers, Random Access, had to fiddle about and reshoot in wide-screen format. So there you are. They're not that cunning though or they would've flogged off some of the space for advertising.

The strategy is not too difficult to follow – just kill everything.

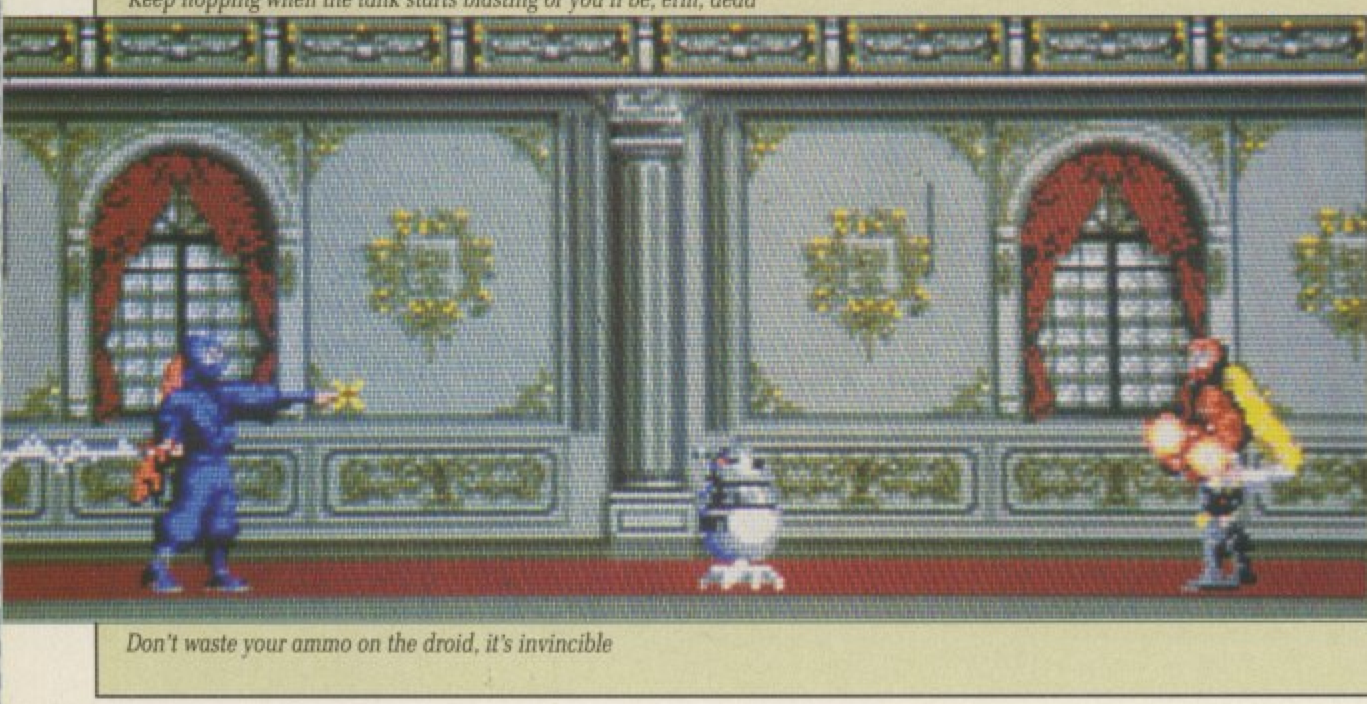
Guys wander on, have a go at you and either die or wander off again. You may also encounter rabid dogs, tanks and flying squirrels not to mention other patrons of the arts martial. It may seem a bit tame, but it is fun, very difficult and very, very absorbing.

Cunningness part two: You will be playing for some while and then notice something. Or, more like it, not notice something, because Ninja hasn't stopped to load anything in yet. Well, actually it has and it hasn't. It has loaded something in – it just didn't bother stopping. Ten million cunning points awarded.

Sampled sounds, pleasant graphics and nice animated



Keep hopping when the tank starts blasting or you'll be, erm, dead



Don't waste your ammo on the droid, it's invincible



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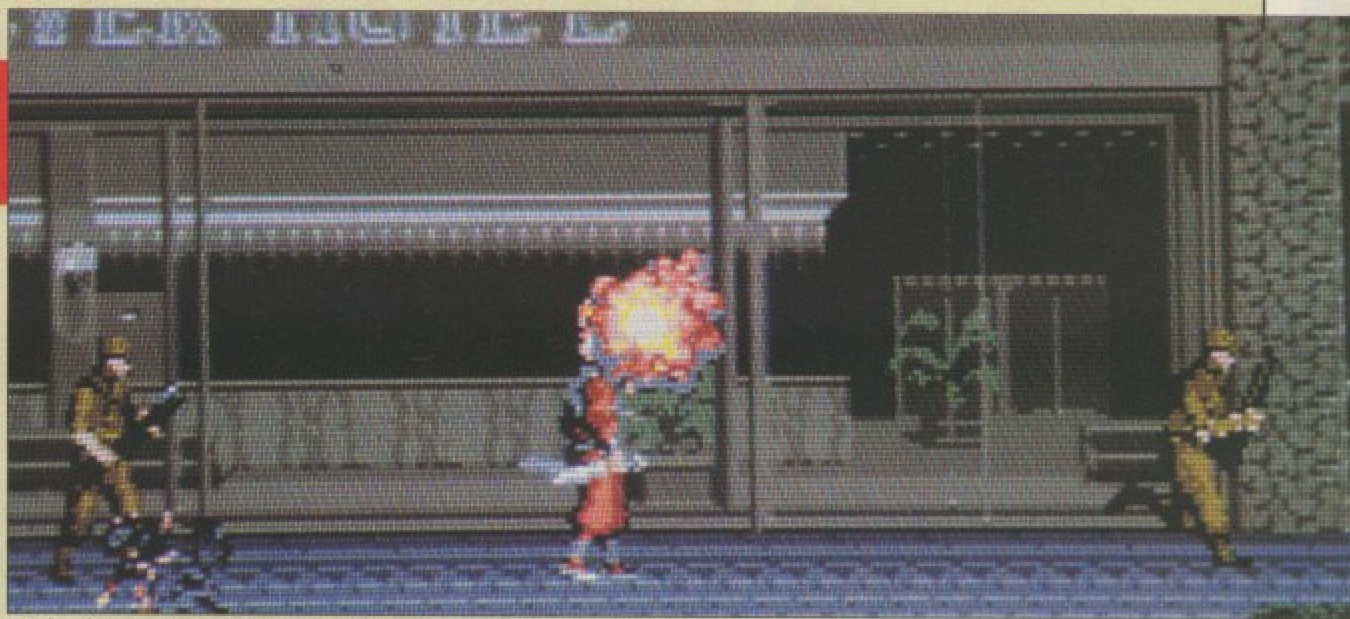
Sound	
Graphics	
Gameplay	
Value	

Overall – 93%

sequences recreate the atmosphere of the arcade. Easy to get into, but there's lots of it and it gets challenging later on.

If I was stripped, bound and gagged until I could sum it up in one word, I would say "Mmmmph". Failing that I think "Compulsive" is the *mot juste.*

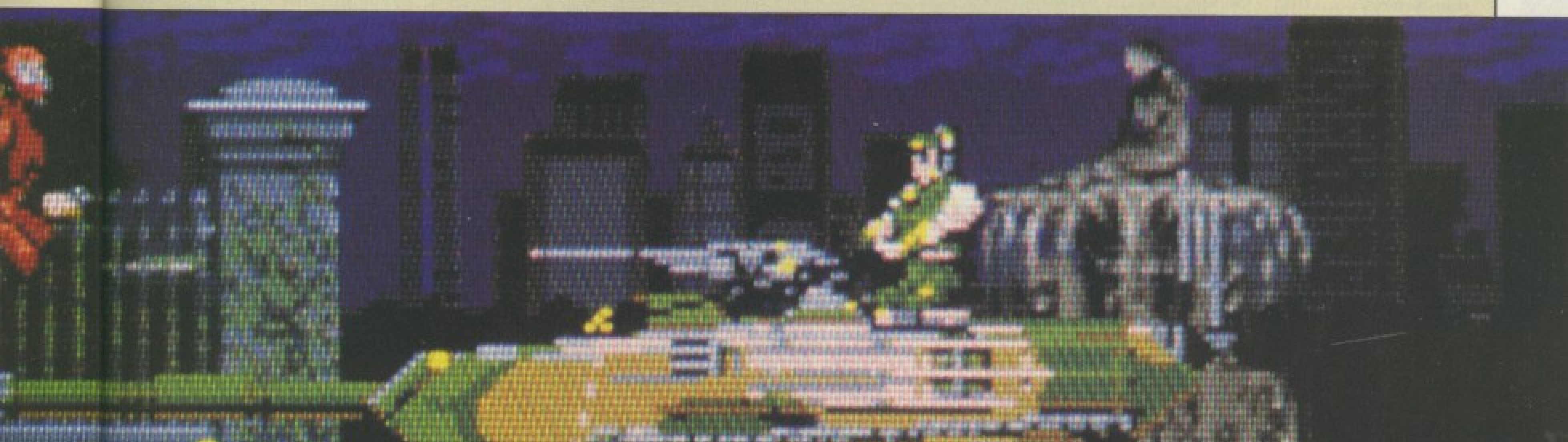
Green



Dodge the mortars and shoot the soldiers for extra shuriken



The final conflict – Mr Big goes for the head, but he only has six bullets.

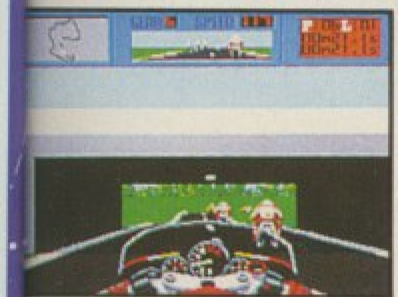


Don't waste your shuriken – you'll need them to kill the guy in the tank

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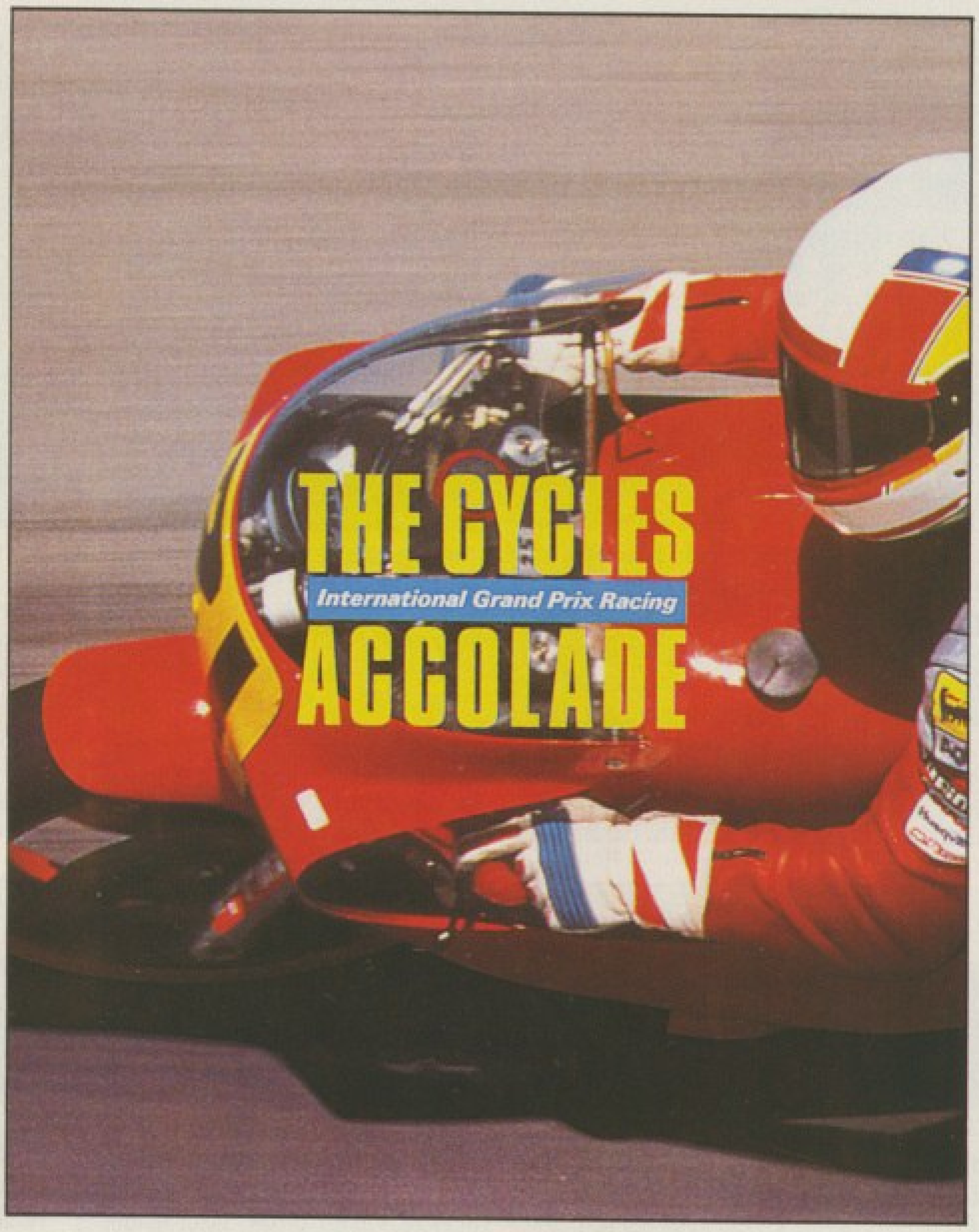
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Screen shots from IBM P.C. version.



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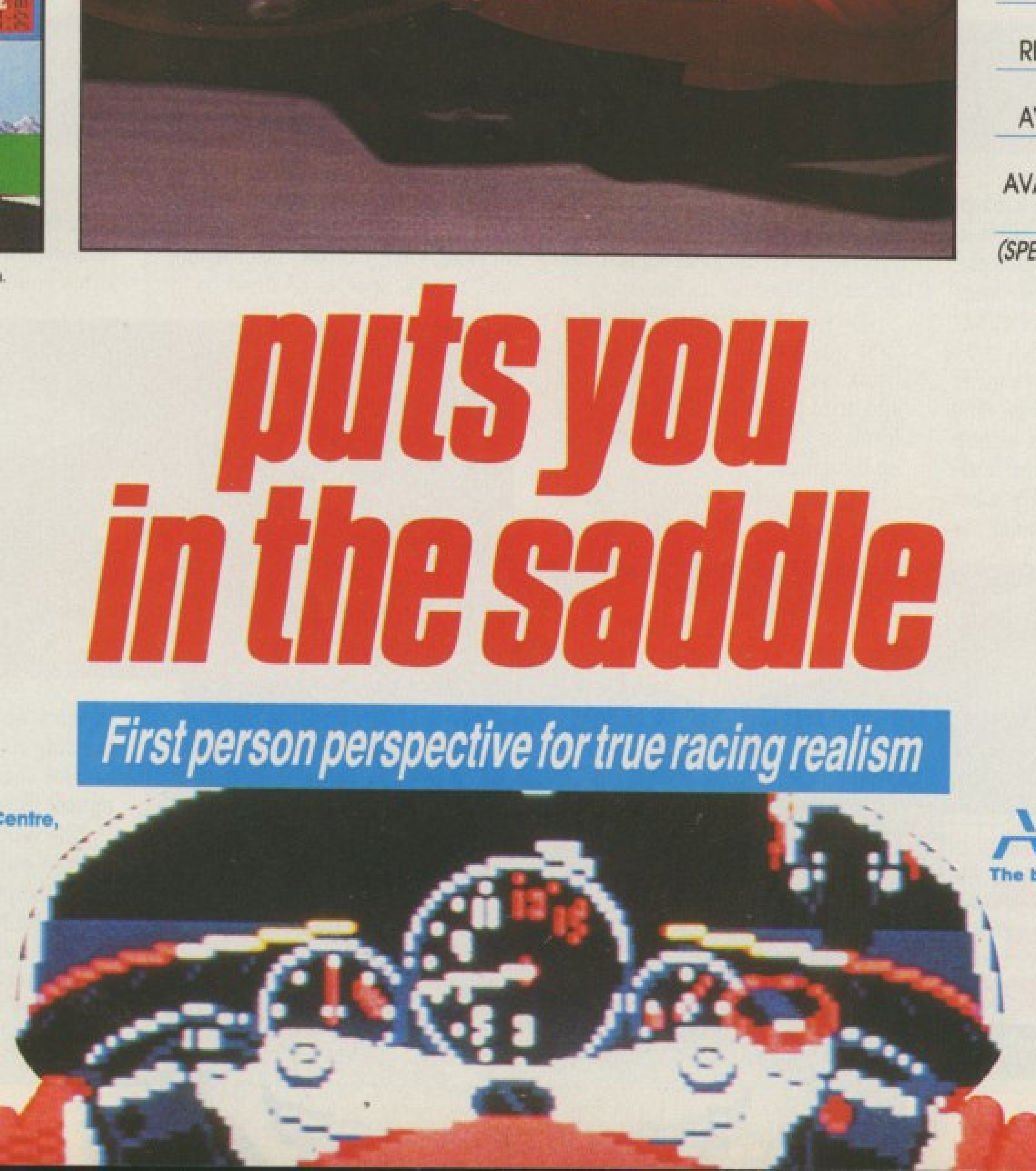
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MINDBENDER

The unbearable lightness of spell casting

DO you think you're pretty smart, do you? Smart enough to out-wizard McDuffin, the greatest mage in the Western Kingdoms? He's been having a little bit of difficulty with his experiments at transmitting spells over long distances.

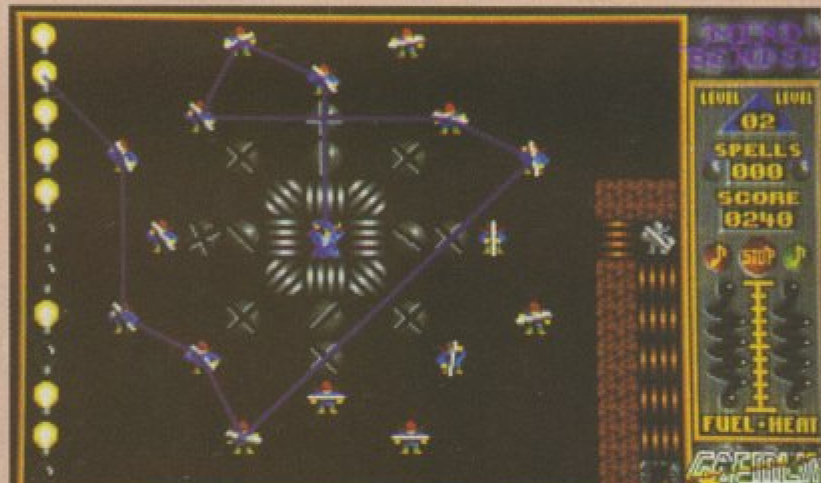
As every student of life knows, there are three types of matter: reading matter, doesn't matter and old grey matter. Unfortunately it is in the department of the latter that the old wizard is deficient – he needs someone to help direct his spell casting activities.

Spell-casting over long distances can be a bit tricky, as we all know. No sooner have you conjured an impressive maelstrom of magic to defeat a rival at a neighbouring castle, than it runs into some itinerant gnome twixt A and B and spends its force.

Now, it is widely held that spells travel in a straight line, rather like a beam of light. The corollory to this is that a beam of spell can be redirected by means of mirrors and so forth. This is what the old wizard is set to test.

Setting up an elaborate array of mirror-bearing gnomes and assorted household objects, he aspires to achieve mastery of remote spell- casting. The softly spoken magic spell must pick up all the magic ingredients, located in effervescing magic cauldrons, before making its magic way to the magic door. Direction of the beam is controlled by making the gnomes change the angle of their mirrors.

Some obstructions are to be negotiated, like the polarisers which allow spells to pass through at one angle only, whereas some are to be completely avoided, like the odd bomb lying around the place. It is also to be appreciated that feedback is highly undesirable



This way... No, that way... Erm..

because the old duffer-cum-wizard is prone to overheating.

Other things to watch out for are walls of ice, amoebas, prisms and evil gnomes who have an appetite for cauldrons. Extra fuel can be picked up – old McDuffin cant keep churning it out forever without assistance.

The puzzles get progressively harder, up to level 50, after which point you are expected to design

CLOWN-O-MANIA

The show with everything but Yul Brynner

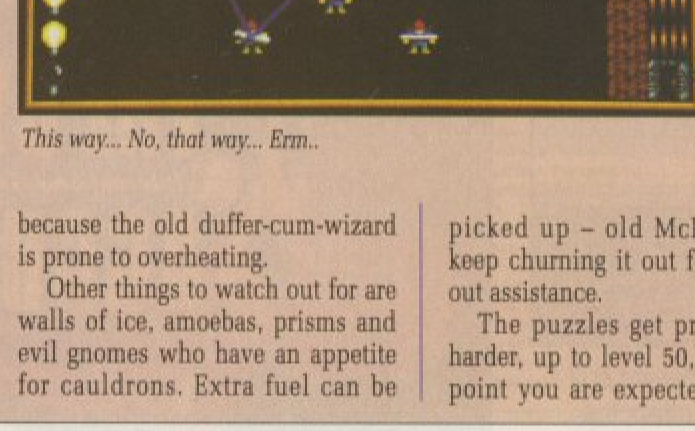
BEPPO is a complete clown. He is. Honest. Short, big feet, silly hat. Yup he's a clown all right. And what is it that clowns do best? Well, they sort of clown about don't they? Apparently not.

Obviously clowning isn't quite as vocational as it once was. One day Beppo comes across a map detailing where he may find treasures beyond belief. Exactly what this sort of sensitive document is doing lying about in the path of insignificant clowns is not taken very far down the avenues and cul-de-sacs of rigorous investigation.

Anyway, the upshot of all this is that our little friend packs his trunk, says goodbye to the circus and trumps off to explore the 70 levels of wealth and woe that make up the game.

Crystals are to be collected to move on to the next level. Various other items litter the playfield including acid baths, transporter devices, energy boxes, razor blades and several species of small nasty creatures which will try to kill you.

Each stage is a sort of split level version of Pac-man, with the platforms connected up and down by

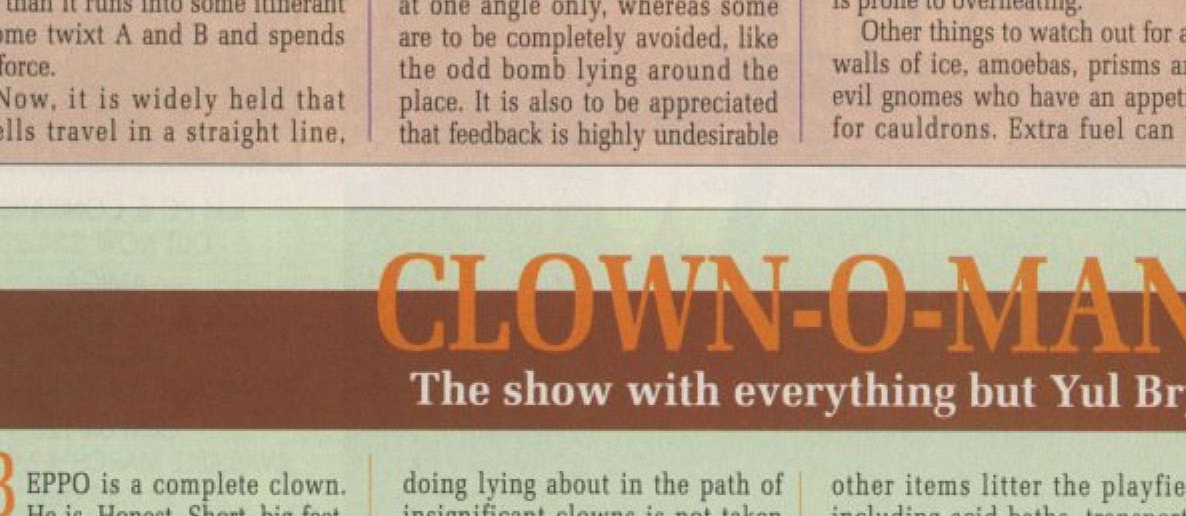


The only way is down

ladders or funnels, occasionally bending round on themselves like one of those perspective-based optical illusions.

The wonderful graphics really help to build up this effect, especially the parallax scroll of the grid in the background, which gives a vivid sense of the platform being suspended in space.

Jumps may be collected, enabling Beppo to leap over



The blue squares round the edge are acid baths, ideal for weekend paddlers

Clown-o-mania
£19.99
Starbyte

Sound	
Graphics	
Gameplay	
Value	

Overall – 77%



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Mindbender
£19.99
Gremlin Graphics

- Sound
- Graphics
- Gameplay
- Value

Overall – 81%

your own. They vary in style from being mad dashes against time to the sort of logical enigma that could perplex even a reviewer.

The more cunning of you will have already noticed that this is in fact the sequel to Deflektor, dressed up with a bit of Pratchett. Graphically it is a lot more cute and friendly, with some nice animated touches, though with a game such as this, frills mean very little when the old cogs of cognition are revolving. The puzzle is all. In that respect Mindbender excels.

Green

assailants or just to connect with parts of the platform that are otherwise inaccessible. Razors are handy for blowing away the massed hordes of anti-clown watchcreatures that Beppo will encounter.

Fleetness of foot (or joystick) is just as important as a highly developed degree of cunning in the fight to stay out of trouble. Most problems are easily solved by Beppo's superior foot-power, though a mind as sharp as the editor's wit is a slight advantage in later levels.

Soundwise, the tune plods along doing nothing really spectacular nor having much to add, but it is competent and not so irritating as to warrant silencing it.

Although the game is based on a very simple idea it still manages to be enjoyable and rewarding to play.

Clown-o-mania is not difficult or taxing until about a third of the way through. That still leaves over 40 levels of well coded and pleasant entertainment. A bargain by anyone's standards.

Green

STAR COMMAND

Ahead groove factor five



If this guy's a civilian, why is he so well armed?

EARTH is little more than a distant memory to the brave pioneers of outer space. Now, at the distant edge of the galaxy, things are moving along nicely for the descendants. Or at least they were.

Bands of wandering space pirates threaten to destroy all trade links. The threat of invasion by a race of highly developed insectoids looms ever nearer. And who are the robot pilots sometimes glimpsed at the outer reaches of your territory?

For some time now Star Command has been doing its best to keep on top of the situation. They've started drafting their troops at an early age, putting them through training and giving them starships in the hope of regaining control before things get out of hand.

You control eight such troops. It's your business to decide exactly what training they should undergo and in which areas – like astro-gunning, medical and heavy arms – they should specialise.

There are four basic classes – pilot, soldier, marine and esper (psychic warrior). Each of these is further divided into 13 ranks ranging from private to grand admiral.

Once you have assembled and trained your squad you must equip them ready for combat. A huge array of items is available – 60 personal weapons, including nuclear grenades, flame throwers and laser rifles, 16 types of armour, four varieties of gun sighting equipment, plus numerous others.

There is an equally wide choice of starships and accessories. You can't afford most of these in the early stages.

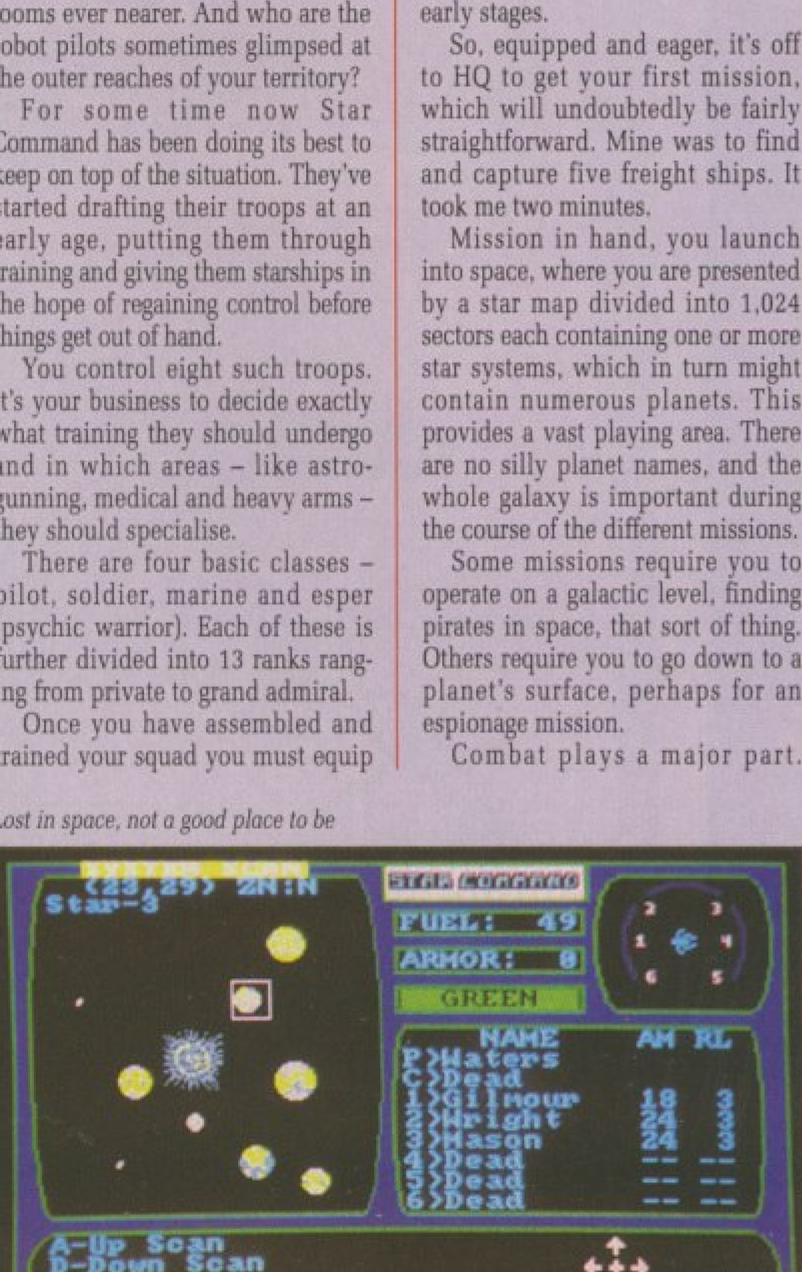
So, equipped and eager, it's off to HQ to get your first mission, which will undoubtedly be fairly straightforward. Mine was to find and capture five freight ships. It took me two minutes.

Mission in hand, you launch into space, where you are presented by a star map divided into 1,024 sectors each containing one or more star systems, which in turn might contain numerous planets. This provides a vast playing area. There are no silly planet names, and the whole galaxy is important during the course of the different missions.

Some missions require you to operate on a galactic level, finding pirates in space, that sort of thing. Others require you to go down to a planet's surface, perhaps for an espionage mission.

Combat plays a major part.

Lost in space, not a good place to be



Star Command
£29.99
SSI

- Atmosphere
- Graphics
- Gameplay
- Value

Overall – 72%

There are two levels of this in Star Command – man to man and ship to ship. Man to man offers greater scope for weapon selection and use of terrain. It is the more enjoyable of the two.

Should you complete your mission successfully, all surviving squad members will receive a salary according to their rank. This can be used to buy more equipment, or maybe a clone for when things get really nasty. Now you can accept a new mission, or just go pirate hunting to boost your finances.

The game is totally keyboard controlled, which is a shame. And messages sometimes flash by too quickly to be read, which is a pain. The graphics are extremely poor, even for a role-playing game and the sound effects would have been better left out.

Sometimes humourous, sometimes frustrating, always thoroughly absorbing, Star Command is based heavily on the famous Traveller role-playing game. It combines the best of both RPG and strategy and is sure to please fans of both.

Mat Broomfield

ONSLAUGHT

Death or glory

RABID TVophiles may recall a weary rice-opera which used to pop up occasionally on BBC2 going by the name of The Water Margin. If you don't, it doesn't matter – actually, even if you do it doesn't matter – all I wish to allude to is a section of monologue which used to appear at the beginning of the show, and which went something like this:

"Do not despise the snake because he has no horns, for who may say he will not turn into a dragon. So may one just man become an army..."

There in essence you have the plot of Onslaught. No, nothing to do with snakes and dragons, but the bit about one man becoming an army. For in the land of Gargore there is a mean son of a tank whose strength is as of 10 and whose ambitions include travelling the world and meeting people, shortly before he cuts them up into little pieces and stamps on them.

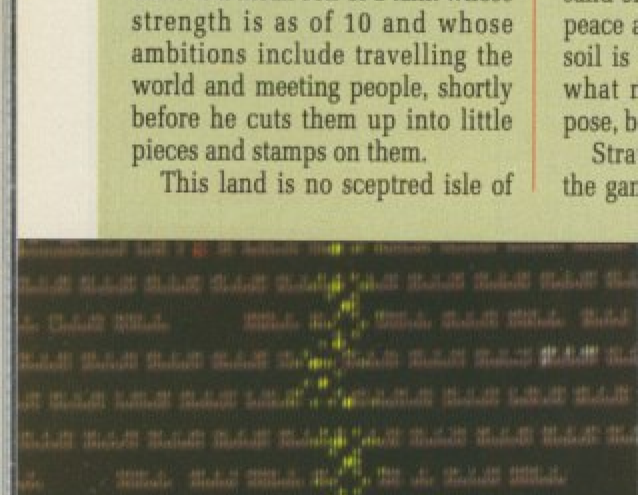


And they are all out to get you

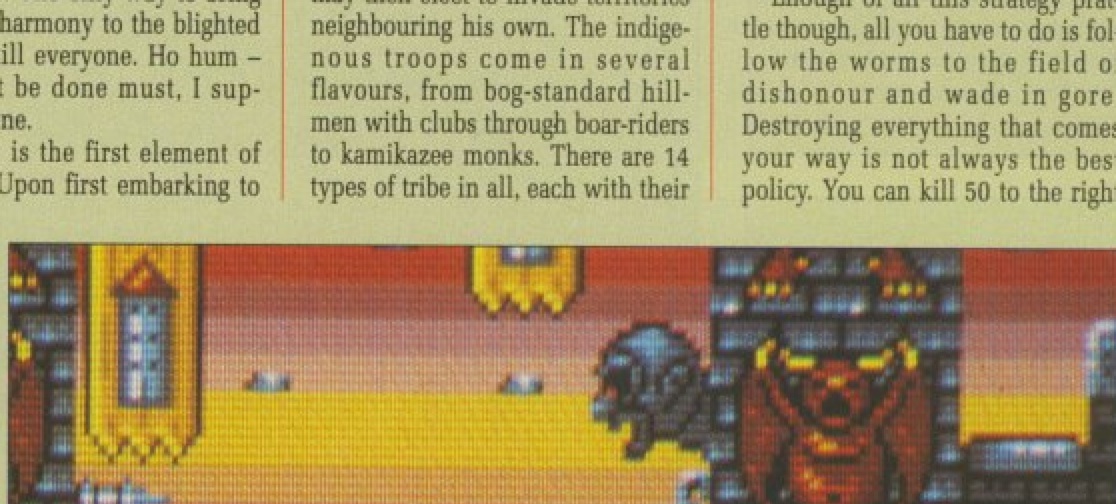
This land is no sceptred isle of kings. It is strewn with the countless dead (and undead) of a thousand sieges. The only way to bring peace and harmony to the blighted soil is to kill everyone. Ho hum – what must be done must, I suppose, be done.

Strategy is the first element of the game. Upon first embarking to his duty the player is confronted by a 16 x 16 grid of the land. He may then elect to invade territories neighbouring his own. The indigenous troops come in several flavours, from bog-standard hillmen with clubs through boar-riders to kamikazee monks. There are 14 types of tribe in all, each with their own peculiar characteristics and preferred strategies.

Enough of all this strategy prattle though, all you have to do is follow the worms to the field of dishonour and wade in gore. Destroying everything that comes your way is not always the best policy. You can kill 50 to the right



You're a one man army, it's kill or be killed



Oh no! Not the boiling oil

Excellence

of you and 50 to the left and not think it too many, but unless you advance pronto on the enemy banner you will be awash with wave upon wave of demented avengers.

Once the enemy standard has been captured, it's off to lay siege to their castle. This is much the same as before but with a nicer backdrop. Finally we come to mind control. This is where you take on a thing with lots of arms throwing stuff at you. Easily the most forgettable part of the game.

If the enemy should capture your banner first, you must go back a stage until either you have won or one side is vanquished. Talismans picked up in combat can be used to flit across the less accessible terrain in order to broaden the range of combat. Occasional crusades and plagues may result in loss of territory, but these things usually pass.

The land may be edited to your own design, to make it easier I suggest. Of course, this means that you can also save your current character – up to 10 on the disc.

Throughout are strewn Hewson-class graphics and sound building up an atmosphere for diabolical devastation. Gameplay is fast and addictive but very tough. If you should manage to conquer the land at one sitting I would be very surprised.

Another Hewson game with ingrained excellence.

Green

Onslaught
£19.99
Hewson

Sound

Graphics

Gameplay

Value

Overall – 89%

TOOBIN'

Mucking about on the river



Red water? Must be the Nile



That looks painful

WE'RE obviously not in the UK here, since one of the things that menaces your toober in this coin-op conversion (can't say tuber 'cos that's a potato) is an alligator.

Mind you, as you float nonchalantly downstream you do get attacked by munching skulls and sea snakes, so it could be just about anywhere. And for Biff and Jet, the supercool tube dudes, this is too uncool to be real.

Some forward-thinking dude has left some six packs floating on the river. These make great ammunition for heading off the various critters that are bent on spoiling your day.

Fishermen and airgun fiends on the bank also respond to the old Budweiser treatment, but your ammo is strictly limited to what you can pick out of the water.

Your tube is a bit like AmigaDos – it needs to be patched from time to time. These patches are, in effect, the number of lives you have.

There are a few other useful objects floating about. There are bonus beach balls and treasure chests, and once in a blue moon you might happen upon a patch or two. Unfortunately there are far more rocks and branches in the water than there are bonuses, so you've got to be really careful with the steering.

For extra points you could try going through some gates for a bonus of up to 1,000 points. If you bounce off a gate, the bonus halves and the gate widens for you to try again. These, you might think, are just a slight interlude in the game.

Actually, if you are lagging behind and the big bad alligator is on your tail, negotiating a gate is the only way of shaking him.

Toobin' has been promised as a conversion for a very long time. This reviewer thinks it hasn't been worth the wait. Sure, there are some bits that aren't completely dreadful – every game has some good bits – but the whole isn't particularly great.

The title does have a good example of colour cycling in a fairly neat waterfall, but the rest of the graphics are small and slow moving. Even though the screen is nearly full height, it's nowhere near wide enough, and the scrolling is dead slow and stop.

It's got a nice tune, but then these days what hasn't? The stereo effect has been used well, with a great steel band sound throughout; it's certainly the only lively thing about the game.

The twin player option also suffers from the screen moving at the rate of the slowest player, at which rate the game gets naff PDQ.

The whole thing smells badly of a rush job. The original arcade game has plenty of potential for conversion, which the programmers have completely failed to take advantage of.

Stewart C. Russell

Toobin'
£19.99
Tengen

Sound

Graphics

Gameplay

Value

Overall – 62%

NORTH & SOUTH

It's only a bit of fun

Amiga Computing Excellence

NORTH & SOUTH, said the manual. Aha, I thought. Refined ladies with swirling dresses and cleavages that you could drive a steam engine down? Rakish young gentlemen and army officers attired with mud stained trenchcoats? Horse and traps racing through burning cities? Passionate embraces? Scandalous gossip?

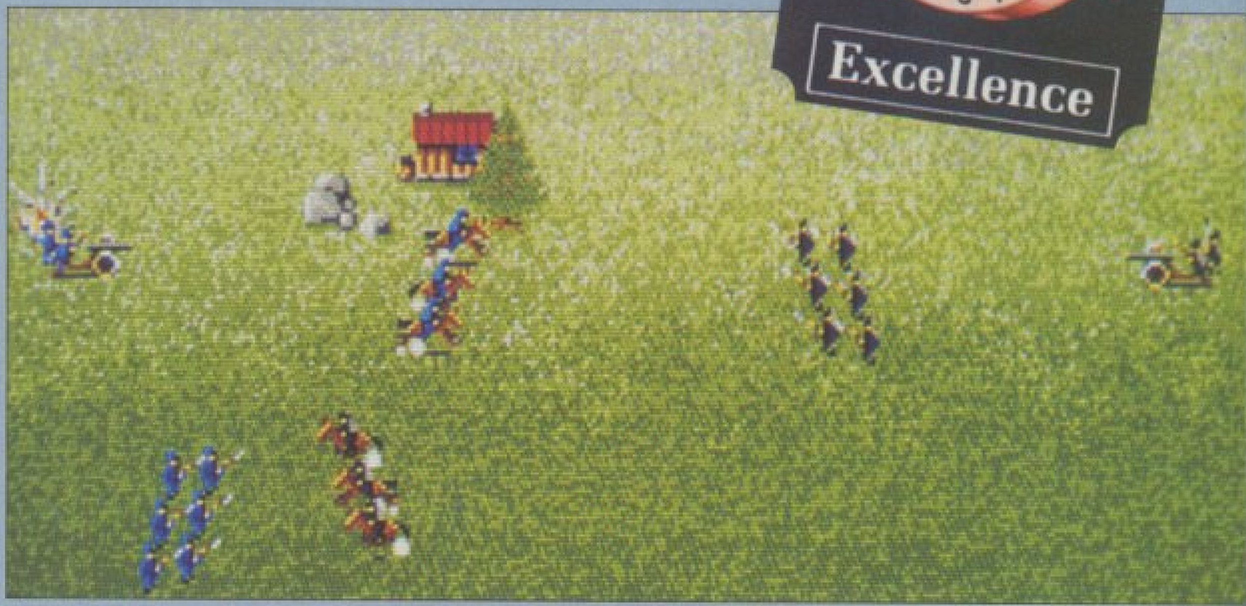
Unfortunately, North & South is nothing like an American TV mini-series starring Jane Seymour (pity). Instead, it's based on a French comic book series called *Les Tuniques Blues*, but only vaguely. The influence of the books stops at using the characters to set the skill level for the arcade sequences.

When a mad bugler and a neighing horse gallop on screen issuing a wild discordant tune, you know that this isn't quite an SSI wargame that's coming up.

Moving around a very simple map of the USA – you can play against a friend, which is *enormous* fun, or the computer – you must direct your forces in an attempt to rid the country of the opposing army.

As a secondary objective it is necessary to capture land to bring in tax revenues, which can be used to buy new troops and secure territories through which the railroad runs.

If you lurk around until the opposing army's train is about to set off, you can intercept it by severing its route. This leads into one of the arcade sections – a frantic race along the roof of a moving train, reminiscent of Harrison Ford in The Last Crusade.



The field of battle – make sure autofire is off!

With enemy soldiers popping up and a timer rapidly decreasing, you must make it to the engine, stop the train and capture the gold. The scrolling is incredibly fast, your character very responsive and the animation distinctly dodgy. Still, it all fits in with the general pace of the game.

The second arcade section, where you try to capture a fort, is exactly the same but has you racing along the battlements towards the fort's flag.



The Union launches its first moon shot

War breaks out when the armies meet. The men line up on one of three types of battlefield, often punctuated by a river or chasm that necessitates trying to cross a narrow bridge while being shelled.

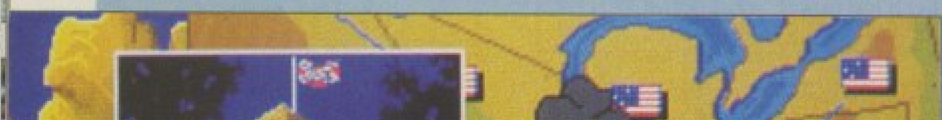
If you're playing the computer you'll notice that you are at a slight disadvantage here. You control each element of your army one at a time. The computer, of course, can have the cavalry charging with sabres slashing, the foot sloggers marching and firing, plus the artillery rolling around all at the same time, turning your side of the battlefield into the Somme.

True, you can set the cavalry off and then switch control to another unit, but you can't have two units firing and slashing at once. It makes playing the computer very difficult. The trick is to eliminate the other side's artillery first, which then gives you an almost unbeatable advantage. If this happens to you, start retreating. Fast.

Come the end of the war, each side is rewarded with a well animated picture of the boys marching home in victory or a field full of corpses, one of which grins at you.

North & South is unlike any wargame or simulation that you have ever played. The graphics are cartoons and there are numerous engaging touches that add flavour. Best of all, the sound effects and music are fabulous – demented bugling, explosions, horses neighing, and charges, victory and catastrophe are all perfectly accompied.

Duncan Evans



Ahem. Guess who chose the wrong language option?

North & South
£24.99
Infogrames

Sound
Graphics
Gameplay
Value

Overall – 90%

MOONWALKER

Whenever you need me, I'll be there



Eddie, are you OK?

SMOOTH criminal Wacko Jacko has found yet another way to be seen in public without having to leave his oxygen tent. Moonwalker has been a book, a film, a T-shirt, a cuddly toy, a type of dance and now my Emerald Isle homeland has produced a twin disc game.

There are four stages, two viewed from above and two from the side. Each stage is preceded by a good animated sequence and accompanied by short repeating sections of sampled MJ music. A bit like the video really.

The first stage reminds me of my long standing all-time favourite game, Rally-X. Jacko walks around the detailed landscape in a small scrolling window trying to collect parts of his rabbit suit, avoiding the over-zealous attentions of numerous fans.

The next stage adds a motorbike and the occasional flattened pedestrian. Don't stop until you get enough green shiny orbs. Then you can transform into a car and jump over a roadblock.

Game three, and Jacko is clad in white suit, armed with a vicious line in automatic firearms. Sideways scrolling displays the interior of a gaming club where there ain't no sunshine when you're gone.

Making sure the baddies have been blown off the wall is the only way to beat it. When you use all the ammo, more has got to be there when you need it, or its bad news all round.

The final stage is the real thriller. Our heroic plasticised young thing transforms yet again, this time into a robot with which you don't wanna be starting something. You have to convince some nasty kidnapper about the way your young girlfriend makes you feel or she's out of your life and it's farewell, my summer love, for ever.

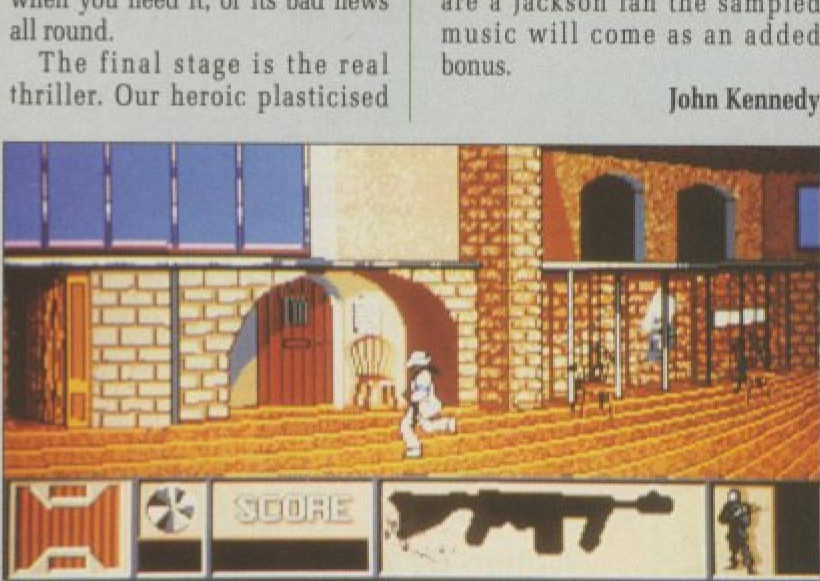
You will certainly spend more than one day of your life playing this game. The stages are sufficiently different to provide interest and sufficiently tough to make it last. The graphics and animations provide the grab factor and if you are a Jackson fan the sampled music will come as an added bonus.

John Kennedy

Moonwalker
£19.99
US Gold

Sound	
Graphics	
Gameplay	
Value	

Overall – 77%



Level 3 – not quite as easy as ABC

ROLLER COASTER RUMBLER

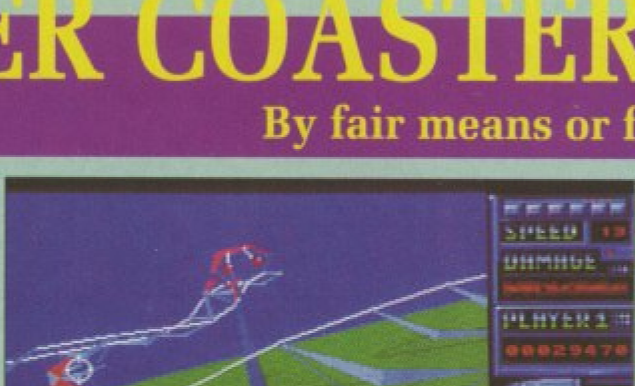
By fair means or foul

ARE you one of those people whose idea of day out with the lads is to go to Blackpool, spend half the day in half the pubs in town, eat three portions of chicken vindaloo at the takeaway and then go on the roller coaster for a bit of a laugh?

Well now you can relive those fun-filled days with Roller Coaster Rumbler. You get all of the excitement with none of the mess down the neck of the mate in front.

Rumbler is rather like a drunken nightmare version of the seaside ride. It features obstacles, flying saucers, targets and lots and lots of shooting.

The basic premise of this 3D filled-polygon ride is that you have to whizz around the roller coaster track shooting all the objects and obstacles without running out of bullets or causing the car an excess of damage. There is a minumum speed, which increases with every run round the track.



Fun for a couple of rides, but after a while it begins to look the same

Speed also increases after you heave up the hills and race down the slopes. This builds up to quite an exhilarating rate of knots, but can be pegged back down to that minimum by using the spacebar as a brake – a good idea as you certainly don't have time to shoot everything at the fastest speeds.

In the air you can spot flying things and can blow them away for more points. Equally, any poor unfortunate driving around on the ground as you pass is fair game for annihilation.

An extra dimension is added if there is a second player. Another gunsight is provided and he gets to shoot at the same things you are shooting at. I would have liked to have seen a split display and players chasing each other around, but then you can't have everything.

Something you *do* get is a sort of free blast. Using all the 3D routines, Tynesoft has patched in a kind of Starglider 2 variant wherein you fly around aimlessly

SPEEDBOAT ASSASSINS

God help America!



YOU aren't often given the opportunity to play "the other side" in games with a Middle East flavour, but in Speedboat Assassin you, too, can be that fervent Iranian revolutionary.

Yes indeed, capitalist pigs around the world require killing as they revel in their decadent harbours, protected by the warships and mines of Satan himself.

I, revolutionary brother Mohammed Evans, have been charged to destroy the imperialist forces of evil and fight to my last breath for the Islamic Revolution. My gunship has dropped me into the harbour of New York, home of the unholiest pigs of all. I weel destroy them.

Hayeee! But what is this? Those sons of Satan have laid mines across the entrance to the harbour. With God on my side, surely I can navigate my way through the winding channel, deadly mines hovering on either side.

BOOOOMMMM! Urk...

...Cough splutter. Quick, Ishmael, speedboat number two.

Ha! It seems I must go at the pace of a snail to avoid their deadly clutches. And here I am in the open and ready to teach the Yankee pigs a lesson. But what is this? Ishmael, you fool! There are no weapons on this speedboat!

Quickly, bring the helicopter and drop them down to me.

Fah, with all this delay the Americans have spotted me and are sending their own speedboats and warship to intercept me. But I, Mohammed Evans, is more than their equal to the task. Take that, imperial running dog tower. Take tha...

BOOOOMMMM! Urk...

...Cough splutter. Those accursed Yankees are as treacherous as sin. Ishmael, the third speedboat.

Yaaeeyy! That is more like it. All four towers destroyed and now I escape to bring further glory to the revolution.

But what is this approaching? God protect your servant Mohammed, a fat Yankee battleship is blocking the exit! All its guns is firing. Oh no, and there were another three capitalist harbours to destroy as well.

BOOOOMMMM! Urk...

...Cough splutter. Ishmael, kindly be telephoning Virgin Mastertronic that its simulation of revolutionary revenge is far too hard. The detection of the sprites also sucks like a camel.

Duncan Evans

Speedboat Assassins
£4.99
Virgin Mastertronic

Sound
Graphics
Gameplay
Value

Overall – 58%

Roller Coaster Rumbler
£24.99
Tynesoft

Sound
Graphics
Playability
Value

Overall – 61%

shooting other aircraft. Fine as a demo, but this hardly qualifies as a game.

Once you have been round the circuit a few times, enjoyed the sensation of blowing things up, felt mildly ill at all the heaving, there really isn't anything else to do. Though quite pretty and mildly impressive from a technical point of view, I'm afraid that Roller Coaster Rumbler has as much depth as a puddle.

Duncan Evans

KELLY X

Seriously overpriced



WHILE the decision to launch Amiga games for under a fiver is laudable, the question is: Do you really want to play a game on the Amiga that a software house considers is a budget title?

Kelly X
£4.99
Virgin Mastertronic

Sound
Graphics
Gameplay
Value

Overall – 23%

A spokesperson for Virgin Mastertronic assures me that the company could indeed make money with only a £4.99 price tag.

This only works if the overheads are as low as possible. Low overheads mean very cheap and shoddy packaging and as little time as possible spent knocking up the program.

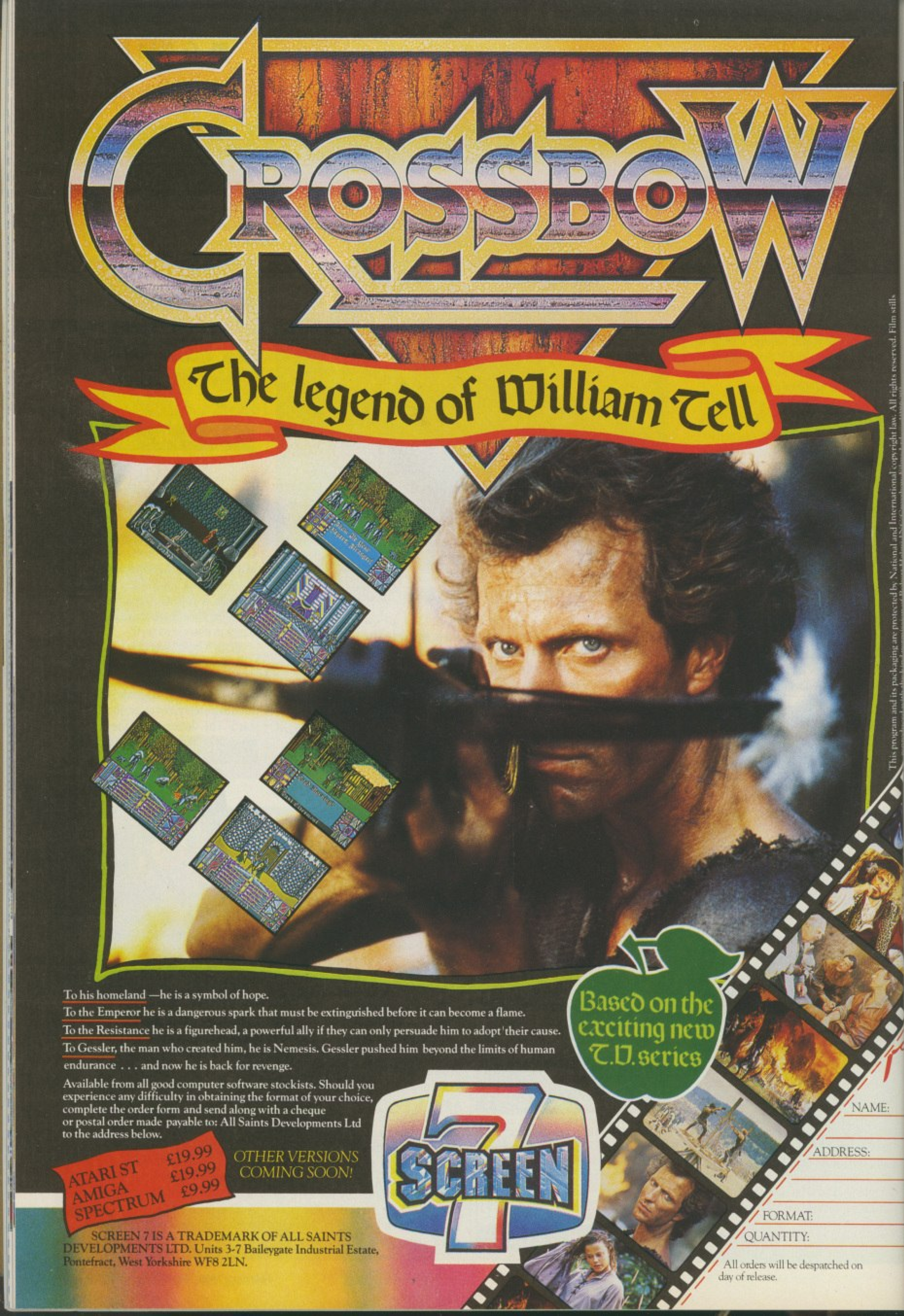
I imagine the profit margin on Kelly X will be hitting the maximum because the packaging is indeed cheap and nasty. The program, which looks like it took all of two weeks to write, is equally cheap and nasty.

Kelly X – which, by the by, was the pre-release name for Xenon, – is a 3D space battle. Fly through space using your Elite-style radar with 10 range settings, shooting government ships and canisters of toxic waste. Aw, an ecologically sound game as well. Avoid being shot since it depletes your shield. Use hyperspace to get out of tricky situations. And that's the game.

Kelly X would be pretty damn boring if it worked to perfection. Since it doesn't, it makes it one of the worst pieces of software I've seen.

Complete tat. Not worth keeping even if someone gave it to you.

Duncan Evans



CROSSBOW
The legend of William Tell
To his homeland —he is a symbol of hope.
To the Emperor he is a dangerous spark that must be extinguished before it can become a flame.
To the Resistance he is a figurehead, a powerful ally if they can only persuade him to adopt their cause.
To Gessler, the man who created him, he is Nemesis. Gessler pushed him beyond the limits of human endurance . . . and now he is back for revenge.
Available from all good computer software stockists. Should you experience any difficulty in obtaining the format of your choice, complete the order form and send along with a cheque or postal order made payable to: All Saints Developments Ltd to the address below.
Based on the exciting new T.V. series
ATARI ST £19.99
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OTHER VERSIONS COMING SOON!
7 SCREEN
SCREEN 7 IS A TRADEMARK OF ALL SAINTS DEVELOPMENTS LTD. Units 3-7 Baileygate Industrial Estate, Pontefract, West Yorkshire WF8 2LN.
NAME:
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RALLY CROSS CHALLENGE

Matchstick men and matchstick cats and dogs

SPRINT has been through almost as many variations in the arcades as on the home micro scene. The bird's eye view of a Grand Prix started out in single player, black and white, then added up to four players simultaneously, and lastly, in Super Sprint, was resurrected as a full colour, mass Drive-in.

Rally Cross Challenge is another Super Sprint clone, and looks like a beautifully animated L.S.Lowry portrait.

Up to four players can race at once, using that rare beast the Special Joystick Adaptor. Otherwise it's a case of fighting for space on the keyboard.

If you can't find three other people, the computer will provide some. The anti-sexism group, Oasis, will be pleased to note that several women drivers are taking part. Then again, perhaps they won't be – the first one is called Sexy Legs. The male racing drivers have equally silly names, like Rev Emup and I.Killem. No comment.



Are you sure this is the way to Coombe Abbey?

Although there are adjustments you can make to fine tune the cars, I miss the little presents Super Sprint left on the track to race for. Collisions between cars are also a let down – they merely hoot their horns at one another. In fact, at the start of a race they all sneak round the track in a tight pack, looking like a group of Killer Cars from a Monty Python sketch.

In an attempt to maximise the potential of the 68000 processor, "humorous" little sprites pop on to the screen, on holiday from IK+ no doubt. Heaven knows what will happen when we have the 68040 to play with.

Night racing is worth seeing though – the headlights effect is very clever indeed.

Sounds are so-so, conspicuously lacking in the Tedious Little Jingle department. Tedious is better than none at all.

The graphics, on the other hand, are lovely.

Rally Cross Challenge
£19.95
Anco

Sound
Graphics
Gameplay
Value

Overall – 63%

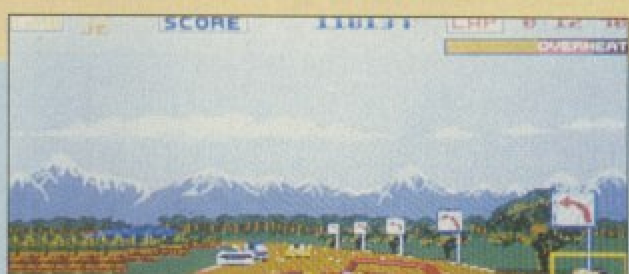
Yet something is missing. That something which makes a game a success and one you will want to play for more than five minutes. With Rally Cross Challenge it's not hard to put your finger on that something – it's the way the cars are controlled.

Until a better standard comes along, we are stuck with the eight position switched joystick. No amount of different acceleration and deceleration options will make up for the fact that it's too darn awkward to play.

John Kennedy

TURBO OUTRUN

Rev it up and start again



Spinning isn't always fatal, it's possible to pull yourself out of it

FOLLOWING on the heels of Outrun, or more probably overtaking it in the outside lane, comes the sequel, now with added turbo boost.

The first problem is with the plot, which seems very complicated. As far as it goes the underlying premise seems to be this: You have to drive your F40 (which is a Ferrari, not a jet) very quickly indeed from one end of the USA to the other along a giant six-lane motorway.

On the way you must avoid hitting things and press the fire button every so often to employ extra-super solid rocket booster things probably left over from the last Columbia, erm, Atlantis launch.

There is something else to do with some girlie and another car which you have to stay ahead of or she runs off with the driver. Maybe she likes to feel the power of his engine. To be quite honest it would be a bit of a relief if she did. If she weren't so ugly she might put you off your steering.

It would all make more sense if you were trying to outrun the tune, which is pretty painful.

Tarmac stretches ahead you to the far horizons. If all goes to plan you should be having breakfast in Los Angeles – all macrobiotic stuff, of course. But first you must brave the mind-numbing terror of grit on the road, negotiate the snowbound interstates and wind your way along a freeway which seems to have been designed by an inebriated nomad with no sense of direction.

The race is split up into four stages, where remaining time is converted into an unfeasable number of points and super hi-power add- ons are added on by teams of trained adder-onners. The choice is between extra grip tyres, an even bigger engine or an even better turbo. I can't say I could tell the difference, to be honest.

This is also the point at which the girlie usually decides to run off with the other bloke. Bah, women – who needs 'em!

Another puzzling thing is the way, just after engaging interstellar overdrive and reclining back in your acceleration couch, the odd black-and-white cop car strolls past.

The animation is a bit jerky, but you won't notice it when you're going Mach 5 through Chicago.

Turbo OutRun
£19.99
Sega/ US Gold

Sound
Graphics
Gameplay
Value

Overall – 70%

Otherwise the graphics are acceptable, though not entirely stunning.

All the hazards and layouts of the 16 stages have been carefully transferred from the arcade machine. This is not a great recommendation since the original wasn't very. Original, that is.

Interestingly the processed rain forest accompanying the game suggests that the turbo be used sparingly, when in actual fact it seems a physical impossibility to finish most levels without at least one stab at the fire-button.

Although certainly better than Outrun the first, and reasonably well converted from the arcade, Turbo Outrun does nothing to lift it above the crowd of good racing games around at the moment.

Green

GHOSTBUSTERS II

Diabolical double disc debacle of digital death



The swinging controls on level one will take some getting used to

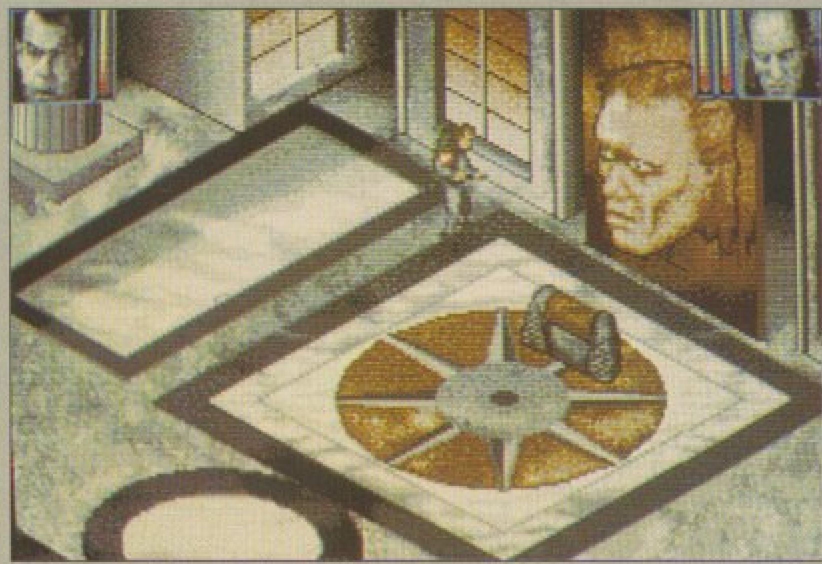
HOLY cow... Oops, sorry – wrong hype. Ahem. When there's something weird in your outside toilet, who you going to call? Not a plumber anyway. Suffice to say the present day equivalents of Peter Cushing, the Ghostbusters, are back.

As you enter the world of the Ghostbusters you will be treated to a wonderfully animated display of cunning Amiganess. Then, of course, it asks you to swap discs. Oh well.

This time large amounts of slime are forming an underground torrent and converging on the downtown museum. There is also the small matter of Dana Barret's (you remember her, played by Sigourney "I'm having a baby" Weaver) little sprog being snatched.

The first level of the game concerns Ray collecting a sample of the slime by abseiling down a haunted sewer. Swinging from left to right enables Ray to collect extra weapons, bits of the scoop with which to scoop up the slime at the bottom, and the odd bottle of dutch courage.

Floating down through the clouds of steam, ghostly hands come rushing up to meet Ray as he tries to collect the slime.



The last, and most difficult, level – beat Vigo and rescue the baby

Some uncharitable ghosts in the shape of outsized fingers attempt to sever your cable as you descend. Altogether an unpleasant experience, especially from the gameplay point of view – the whole level is too difficult.

In contrast, level two is incredibly easy. It is possible to get through the whole thing by firing just a few shots. You control the giant Statue of Liberty, hot-footing it down to the museum and protecting gangs of mindless helpers. Nice animation of Miss Liberty.

Various squadrons of flying ghosts and denizens of the netherworlds attack in formation, but they're nothing to worry about.

Lastly the action moves to the museum, where all you have to do is rescue the ungrateful sprog from the altar. You cannot just write off this final scene however, because there are still two fearsome baddies to overcome.

The first of these is Jonosz. He will terribly resist your efforts to snatch the sprog by firing at you. Unfortunately the entire range of death-dealing weaponry possessed by our heroes is not sufficient to give him cause for concern. Likewise Vigo, who emerges from the picture eventually.

The opening sequence and the fillers between level feature excellent animation, digitised stills and good samples and arranged sounds. Animation and well defined graphics are equally brilliant throughout the game, though the disc swapping gets a bit of a pain.

While Ghostbusters II is undoubtedly an audio-visual feast, there is little game in it that is fun to play. Rather like a Peter Greenaway film, we are treated to a high degree of polish and art with very little underlying substance.

Green



Level two features a beautifully animated Liberty

Ghostbusters II
£24.95
Activision

Sound
Graphics
Gameplay
Value

Overall – 68%

Distinctly Digita



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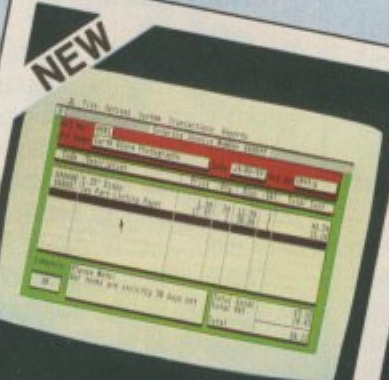
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MANIAC MANSION

Is there a doctor in the house?



I suppose a ham sandwich is out of the question?

TAKE one remote and mysterious old mansion. Include a kidnapped heroine and naive group of rescuers. For good measure, add a mad professor, a homicidal nurse and a teenage commando with a hamster fetish. Put it all together and what have you got, apart from material for a dozen tacky horror films?

Yup, that's right, you've got Maniac Mansion.

Although this is essentially an adventure, Lucasfilm has managed to dispense with all that tedious typing, and has successfully created an animated game that is fun to play and enjoyable to watch. It uses a virtually identical control system to its predecessor, Zak McKraken.

Initially, you play the part of Dave, whose girlfriend Sandy has been kidnapped by Fred the mad prof.

You placed an advert on the school notice board asking for volunteers to assist you in your rescue bid. Before you stand seven applicants, each of whom has different abilities in areas ranging from surfboarding to physics.

Having selected two people to join you, it's off to the mansion, where the game proper can begin.

Your group starts on the road just outside the house. A sign sets the tone of the game: "WARNING! Trespassers will be horribly mutilated!" Ignoring this message, you quickly encounter the first problem – how do you get in? The solution is as logical as it is a cliche. Once inside, the puzzles become somewhat more obscure.

There seem to be so many objects available, but never the ones that you want. Unravelling the intricate web of the plot is a time-consuming but enjoyable process.

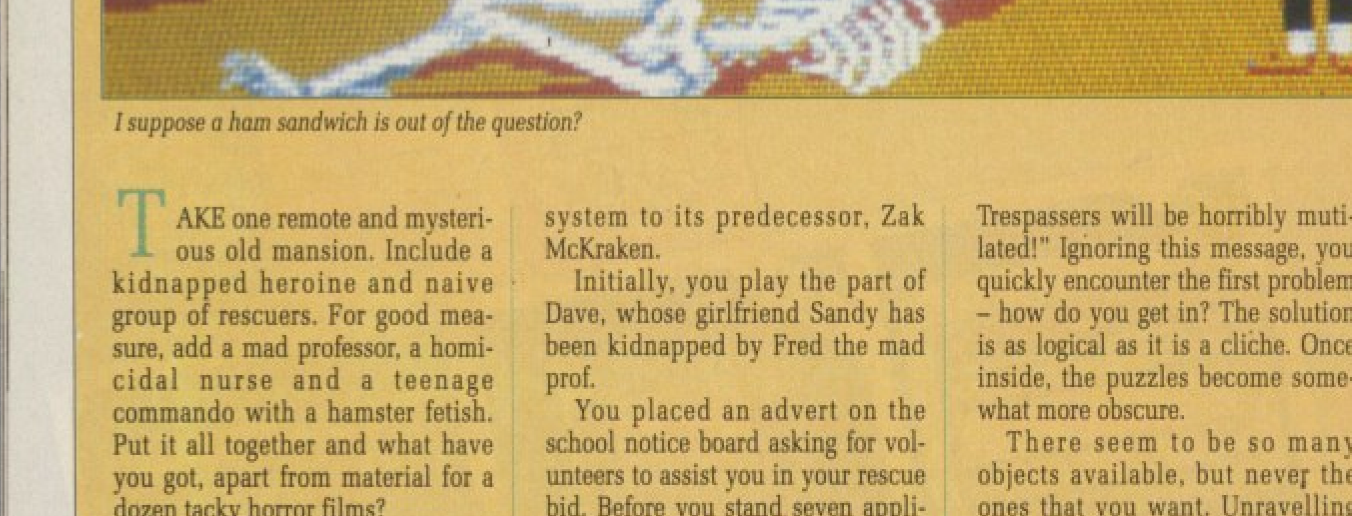
At various times during play the game will be interrupted by brief flashes from other parts of the house. These show what is currently happening to Sandy, who despite her bravery is due to have her brains sucked out.

Each of the three heroes can be controlled individually, and while they will be needed to work solo for much of the time, there are occasions when cooperation is the only solution.

Lucasfilm says that the game can be completed with any combination of characters, but the plot will be modified according to the selections you make. Thus you may play many entirely different games before truly completing Maniac Mansion.

I can't help but draw comparisons between Maniac Mansion and the cult musical, The Rocky Horror Show. They both have a very offbeat sense of humour. There are numerous other similarities, all of which serve to enhance the intriguing story line, recreating a Sixties horror atmosphere.

Mat Broomfield



Aha, a hi-fi! Wonder of he's got any Pink Floyd

Maniac Mansion
£19.99
Lucasfilm Games

Rating	Score
Aura	██████████
Story	█████████░
Gameplay	████████░░
Value	████████░░

Overall – 87%

SHUFFLEPUCK CAFE

Air Hockey for weirdos



Looks like our ad sales team are on the binge again

SPOTTING a sales rep out on the road is easy – he's the guy in the red Orion with a jacket hanging up in the back. In the future it'll be easier; just look for the jacket.

Things have taken a downturn in your life. On the way to closing the biggest sale you've ever negotiated, your new (possibly red) Nash Sombrero decides to play up, forcing you to take the nearest exit. Too bad it had to be the one for Wrong Side of Town (Central).

Grabbing your jacket from out the back, the only possibility of contacting the AA seems to be the local bar. This place isn't a quiet martini and wallpaper music establishment. No, in dive terms this one's the Acapulco cliffs.

The clientele appear to be what's left after the dregs of humanity and a variety of other races have decided to call it quits. You can see a phone way over in the far corner, but these people won't let you by until you've proved your worth at the Shufflepuck table.

Shufflepuck's like Air Hockey, that ancient arcade attraction that looked like a cross between a snooker table and a steam iron. Each player has a paddle and the aim is to get the puck past the opposing player. In this version a point is marked by smashing the glass screen in front of the opposing player.

To get through to the phone you've got to beat all eight of the local players. They range from the wimpy Skip Feeney through the initially good but increasingly tipsy Lexan Smythe-Worthington to the reigning champion and hard man, Biff Raunch. They have their own style and weaknesses, but it will take a lot of playing to beat Biff Raunch or Princess Bejin, the Cafe's number two player who just happens to have a telekinetic serve.

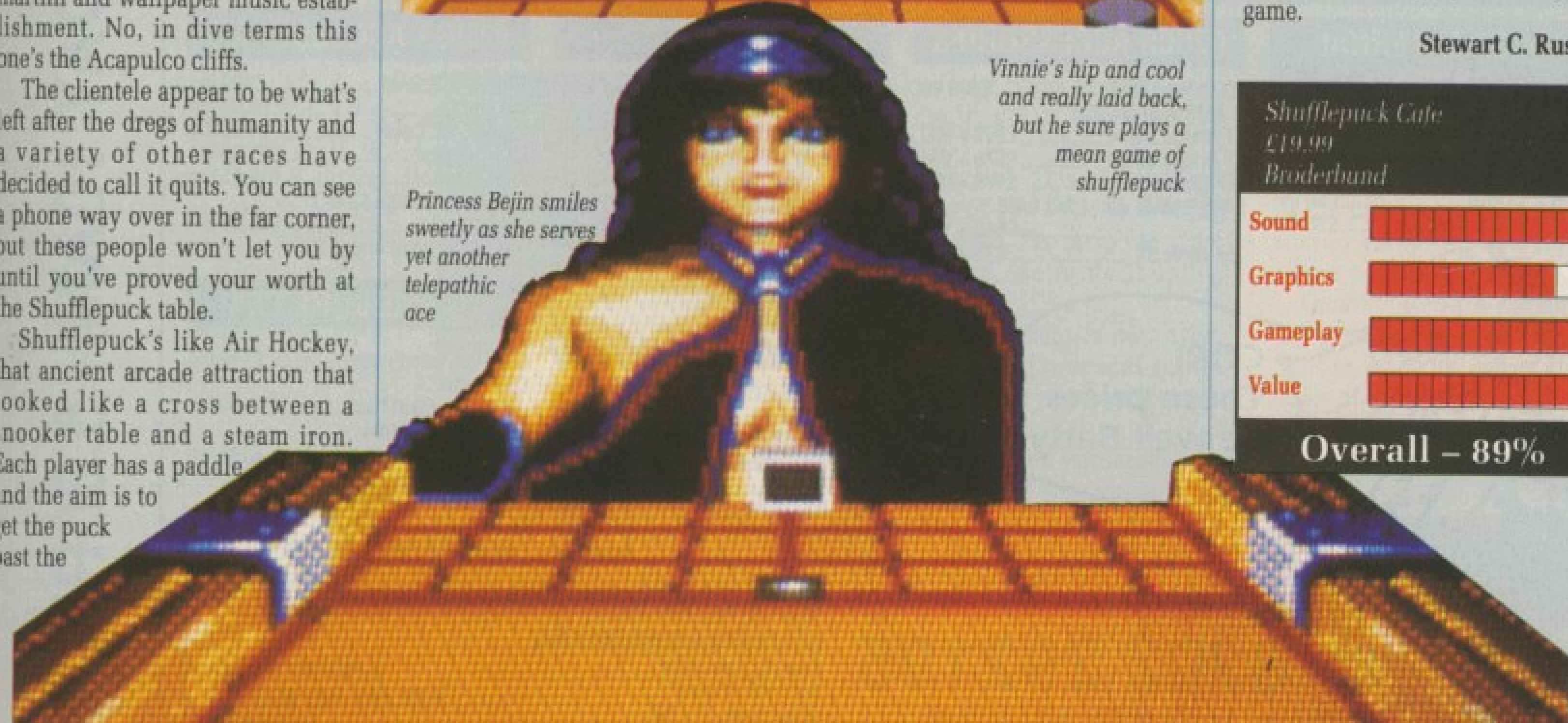
Practice can be had by playing any of the players singly or by programming a robot to be as good or as bad a player as you want.

Shufflepuck is simple, but with gameplay that's truly offworld. From the weird intro tune to players' exclamations of disgust, the sound is neatly atmospheric. As this is a straight USA import, it's got a slightly shortened screen, but despite this the graphics carry the game.

Stewart C. Russell



Vinnie's hip and cool and really laid back, but he sure plays a mean game of shufflepuck



Princess Bejin smiles sweetly as she serves yet another telepathic ace

Shufflepuck Cafe
£19.99
Broderbund

Rating	Score
Sound	9/10
Graphics	8/10
Gameplay	9/10
Value	9/10

Overall – 89%

PICTIONARY

Is it a bird, is it a plane...?

Pictionary
£24.99
Domark

Sound	
Graphics	
Gameplay	
Value	

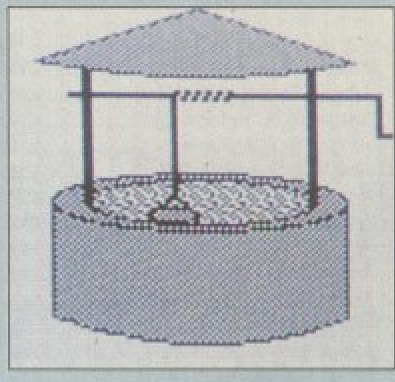
Overall – 32%

PICTIONARY was a nice game. I say was, because it used to be played by people, and the real fun was in how you worked for and against those people. It was a sort of drawing game with rules, where guessing the word hidden in the picture the other player had drawn would move you around the board. Just the kind of thing to play with a group of friends.

To make it different from the board game, the computer version uses the gimmick of the Amiga drawing the pictures. It also looks after the board and rolling the dice for you. But it sadly misses the mark when it comes to the guessing part.

If the Amiga is drawing one of its pictures, off it goes into a rather tacky black and white sketchpad program where every line or fill makes an absurd squeak, parp or pop. It's irritating the first time through. It gets more irritating the more you play it.

So, the Amiga scribbles away a picture, and once you guess the word you hit the spacebar. Then



I wish... I wish... I wish I was playing the board game instead

you have to hit Return to say that you really want to make a guess. Then it finishes the drawing and tells you what the word was and asks if someone got it right.

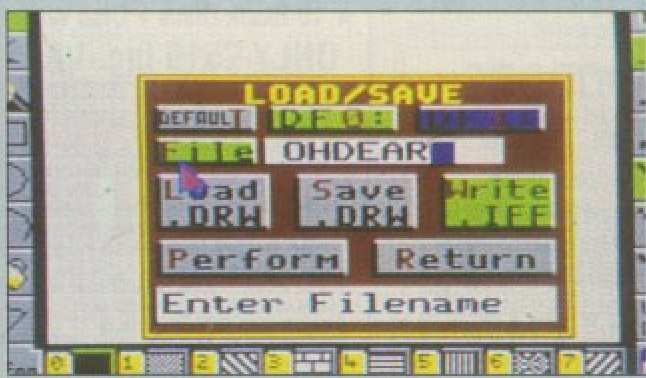
If it's a picture where anyone can guess, it has to ask you who actually got it right. It then makes you click the mouse on the Continue button and then makes you click the mouse on the Next Word icon. This bit is just to make you feel busy, because there is no reason to it. What it actually does is make you feel irritated having to repeat this monotonous process.

If you want to draw your own pictures you have to play as teams. And even then the game has plastic cards with words on them which you are supposed to use to stop you cheating. More tedium.

I tried the game with a couple of friends, but all the computer succeeds in doing is killing any real game interest. The graphics don't help much, being tacky in the extreme with bad colour choices and a singularly static board, most of which can be put down to it being released across 8 and 16 bit machines and catering to the lowest common denominator.

Pictionary is an unsatisfactory attempt at computerising a game, both from the technical and game-player points of view. There are too many gimmicks. There is even an option to save your black and white rough sketches as IFF images. As if the Amiga was short on art packages!

DJ Walker-Morgan



No save to RAM:, only eight chars allowed per filename, no disc catalogue...

QUARTZ

Better than clockwork

CRYSTALLOGRAPHY is a fun subject. No, really it is. Packed with useful and everyday concepts such as Burgers Vectors and Peierls-Nabarro Stresses. It's rivetting reading for insomniacs.

This gem of a subject (wit, or what!) doesn't exactly spring to mind as the plot for a particularly mindless shoot-'em-up, but Firebird has tried.

What has happened is somewhere, somehow, a crystal lattice has come over all unstable. This has been deemed a Bad Thing, so a suitable bozo has been found (viz. you), plonked in a small space fighter and shrunk down to be small enough to fit into the crystal.

To get a rough idea of the required size, think of the weeny side of very, very tiny, and then some. Even now, you're still out by a couple of hundred angstroms, which are nothing to do with what a depressed artificially intelligent



Splitting the nucleus

system might have. A rogue nucleus is causing all the trouble.

It's big enough – relatively, of course – to cause you real problems with your standard issue weapon, so you must stroll about the nucleus, blasting open quarks to capture the valuable neutrinos inside.

Now a neutrino is an incredibly small and fast thing. Travelling through the Earth doesn't cause a neutrino to even blink. But that's only in real life. Once you've caught enough of them in Quartz you can use them to synthesise new and more destructive weapons.

The nucleus does its level best to get rid of you with an orbiting electron cloud. The more you shoot the nucleus, the faster it spins. Until it splits.

Once the nucleus is destroyed, you fly off via an enormous change of scale, through a meteor storm to the next crystal.

Quartz has been put together by Paul Shirley, he who wrote the 8 bit classics Spindizzy (clever) and Mission Genocide (violent). All his games have some feature that's neat.

The new thing in Quartz is a multi-level scroll, with shadows between and above levels, and a parallax starfield behind it all. The actual play area is small, and the screen is shorter than it has any right to be, but the effect is generally quite neat.

The tune is palatable too, if you haven't had too much of electropop already. There is but one problem. This type of game, though fun and well presented, can't really justify its £25 price point, especially since some companies are trying to release bearable games for a fiver.

Quartz is certainly good. The lattice level is strongly reminiscent of Sinistar, while the meteor storm bit tastes of every scroller you've ever played, so it isn't exactly original.

Stewart C. Russell

Quartz
£24.99
Firebird

Sound	
Graphics	
Gameplay	
Value	

Overall – 82%

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VISA

HOLE-IN-ONE

Taking a swing for the better

THERE are two ways to write a golf game. The first is to spend every last ounce of programmer effort to produce a simulation that is as close to the real thing as the machine allows. This can produce some spectacular results. But for those who think that golf is about as much fun as Antarctic nude jogging, there's not a lot to recommend it.

The second is to take the basic idea – hitting a small ball towards a slightly larger hole – and just have fun with it. This is what Hole-In-One Miniature Golf does.

It should take anyone with half a brain and one finger about 10 seconds to get to grips with the mechanics of Hole-In-One. The playing screen is a view of the green from above. There's a small white rectangle where your ball is placed with an initial click on the mouse, and a small black hole into which that ball has to be propelled.

Once the ball has been placed, moving the mouse away draws a line. The length of the line shows the strength with which you'll hit the ball, its direction indicates where the ball will go. Press the mouse button and the ball flies off hopefully to end in the hole.

From such a simple basis, Digitek contrives to give a game with as much skill, subtlety and frustration as anything with a plot 10 yards long.

For starters, the holes can have bumps and dips, like a normal golf course, represented by different shades of green. Some care has been taken to get the normal laws of physics right. With skill and judgment the ball can bounce and curve as it would in real life. Practice or a lucky shot can get the hole-in-one, where a digitised crowd sighs in an impressively impressed way.

Half-way through the tutorial course you get the impression that Digitek is admirably perverse. Slowly, features are added – sand, water, moving barriers – that make the shots more tricky and the hole-in-one less likely.

Parts of each screen get hidden under bridges, or connected via teleport pads that move your ball instantaneously from one place to the next.

The skill with which each new obstacle is introduced in the tutorial is finely judged. Towards the end, each new hole generates a feeling of "But that's impossible!", followed by the pleasurable sensation of spotting a shot that might just work.

Hole-In-One
£24.95
Digitek

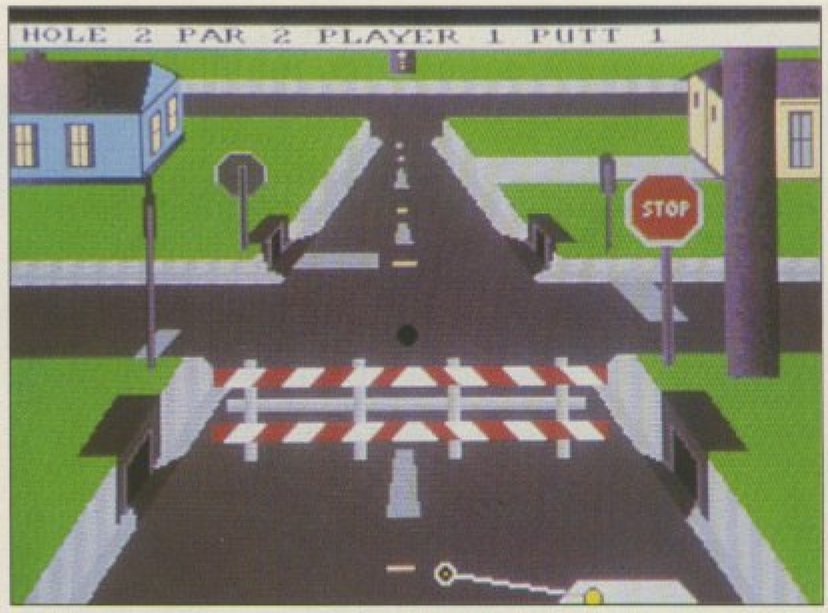
Sound

Graphics

Gameplay

Value

Overall – 81%



OK. Now for a quick swipe around Milton Keynes...

There are lots of courses, each with a theme illustrated by pictures and the appropriate fiendishly testing gadgets littering the holes. The game comes with two course discs – the simple ones are merely designed to be tricky, the complex ones start to fiddle with the laws of gravity, logic and eventually your sanity. But each new torture is solvable.

This, combined with the very simple user interface, makes Hole-In-One a paragon of addiction.

Rupert Goodwins

KEEF THE THIEF

A brush with the law

SO, after another swift telling off, Keef was pushed out of the town to survive the perils of the jungle. Realising that he was new to this civilisation, he studied some of his many notes strewn throughout his clothing, and remembered the history of the Tri-City and Tel Mercon.

Many centuries ago, a man without power or influence rose to become Emperor. Nobody knows quite how. Telloc was his name.

Telloc was more egotistical than Duncan Evans, loved himself more than Green, and showed it by plastering his name on all and sundry. A city was built called Tel Mercon.

After a prophet predicted his future, Telloc had a fortress built and named it Tel Hande. He locked himself away for many years and forgot about the welfare of his people.

Tel Mercon began to look strangely like the streets of London, with peasants begging on the roadside, living in dark corners and alleys. The rich stayed wealthy and the poor grew poorer.

Enough was enough. Grouping together, the streetbound and homeless revolted. They lay siege on Telloc's fortress, while the man himself was locked inside chanting spells he believed would save him from the prophet's prediction. But a single word out of place caused Telloc to disappear in a puff of sickly smelling green smoke.

The city rose from the gutter and was renamed Same Mercon, The Jewelled City.

Releasing the notes from his grasp, Keef looked around this foreboding place. Survive he must, because at least one elder from his old town had 50 gold pieces riding on him.

Keef The Thief is another game in the long line of point and click adventures.

Keef begins in the jungle close to the city of Same Mercon, where

Keef the Thief
£24.99
Electronic Arts

Aura

Story

Gameplay

Value

Overall – 69%

he can talk to many people and steal from many houses. But Same Mercon has a great police force which patrols most streets and has an incredible knack for catching low-lifes like you.

The objective of the game is to break into the city's treasury and steal a most valuable ancient artefact. But the treasure is periodically moved around a maze – pinching it is not as easy as it at first seems.

There are a few busty women in the game, all of them quite tempting for a young thief like yourself. I had no luck chatting them up. But then I'm ugly.

The game is certainly a challenge, especially creeping into empty houses and walking out with the booty without getting caught. I still haven't got the hang of combat and rarely survive an attack.

I enjoyed Keef The Thief, but can see that my days as a tea-leaf are numbered.

Andrew Banner



To get to the treasury you must tickle the princess's fancy

MAGIC MARBLE

A roll on part

ELGIN sat in his agent's office. She wasn't a very good agent. Most of the scripts on her desk ended with the main player getting killed.

"Besides," she told Elgin in an Annabel Giles cut-glass accent, "there aren't very many parts for marbles in modern computer games. They are passé".

He wouldn't have minded, but ever since he put on the boot polish for a roll-on part in Marble Madness as one of the evil spheres which try to knock you off, he had been out of work.

Elgin felt rejected and rolled out of the office knocking over the remains of a flower pot which had been hacked to death by some Ninjas earlier that day.

Out in the street he met Buster, a friend who worked as an explosion sprite in shoot-'em-ups. Buster was on his way to audition at the fledgeling Sphinx software house. "Tag along", he said.

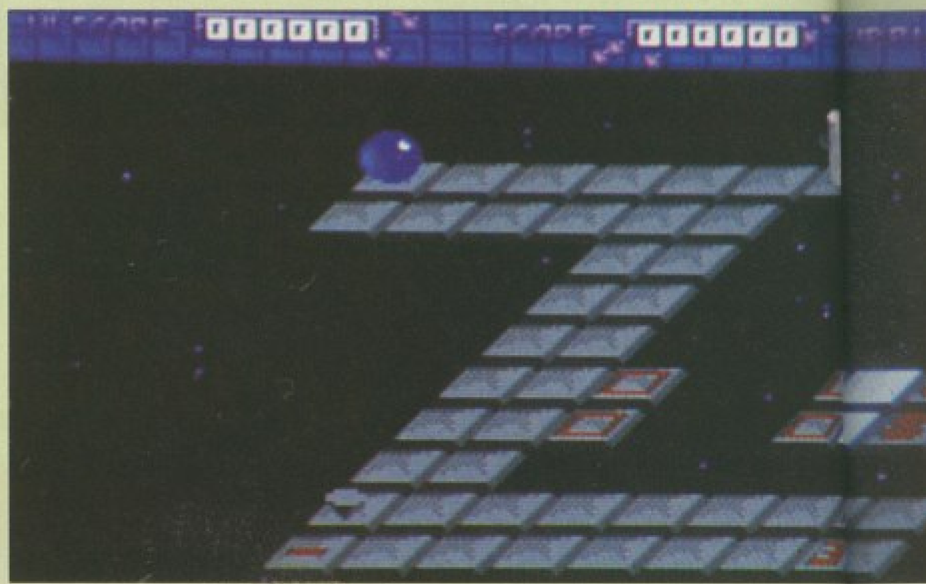
The Sphinx office smelt of reformed pirates, people who didn't shy away from composing unbelievably dull electropop durges on dodgey copies of Soundtracker. Buster went into the office to be cast in Thyrid, which Sphinx billed as Come Save Thyras – beat The Guardians of the Elements.

Lying on the coffee table underneath a copy of Playsprite Magazine, Elgin found a dog-eared script. Magic Marble. The plot looked thin. Something about a marble called Marvin travelling across three lands made of small tiles to save the planet MarbleBlue. Yuk, thought Elgin. And he was right.

But the action sounded Ok. Lots of stunts, transforming into a man, walking on the thin ice, bouncing off mirror type devices, turning hot to melt the ice, becoming indestructible or suddenly being able to fly.

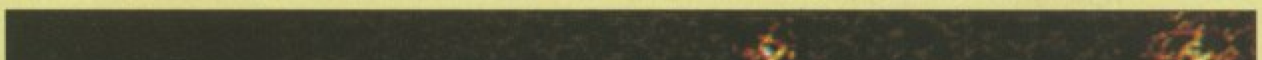
The maze scenes sounded tedious, but jumping ramps was dead exciting. Perhaps Elgin could get a job as a stand-in stuntmarble.

Not exactly a high budget production, but good at combining the skills of learning a map and some adroit movements to get through the three acts. Well crafted so that the skills picked up in the first act are necessary to get anywhere in the second.



DRAGON SPIRIT

Yawn



Dragon, the medieval equivalent of an F-16

DRAGON Spirit – the very name conjures up a cheap Chinese hellbrew, the kind of electric soup which is bought with multiples of "the price of a cup of tea". Nothing could be further from the truth.

It's about Dragons, and we're not talking about the only computer in the world with a processor so slow that you can hear every tick. No, we're talking napalm breath here.

The first thing you notice about Dragon Spirit is that it's in the standard Tengen Atrocious Plastic Box, the one that kills all known instructions dead.

The second thing you notice is that the loader makes the drive sound like an elephant after a night on the beans.

Disc protection is a necessary evil, but when it tries to bend Amy's drive in the noisiest way possible, the evil surely is *un*necessary.

Basically, some dumb princess has got kidnapped by some lowlife, and it's Nerdbrain's job to do the fetching.

The local quack has convinced

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Remembering what symbols did what would prove a bit tough for someone like Elgin, who had never had a speaking part, but the Steely cast in the lead would have no problem.

But Elgin was wrong.



You even get a free blue marble in the box!

Magic Marble
£24.95
Blade

- Sound
- Graphics
- Gameplay
- Value

Overall – 69%

Bright the Steely burst out of the Boss's office in a cloud of cigar smoke, shouting: "I'm not working for you if you insist on having some metallic tart on the high score screen".

He did a double backflip to make the point, not realising that this doesn't look very impressive when you are spherical.

"Don't worry", boomed a voice from the dark. "We'll find another marble to play the lead. Take your 0.8 per cent carbon and stick it where the electron gun don't shine."

This was his chance. Elgin walked into the office...

Simon Rockman

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you that you're a dragon. "Here," he says. "Eat these dubious mushrooms. Incidentally, you're a dragon now".

So off you fly to kick some heads. Well, give them a thorough singeing at least. And while the subject of heads is still within its sell-by date, you start off with three of them, each capable of blatting out air-to-air and air-to-ground destruction.

As you flap your dismal way along the narrow river valley – made all the narrower by the programmers – you realise that it's YABS – Yet Another Boring Scroller.

Where a scroll would be described as smooth on the other thing, in Amiga terms this one is found wanting in the rapidity department. It's way too slow. And it gets even slower as more things appear.

Everything that could cause a young dragon harm wobbles in a most alarming way, and indeed this is the only reliable method of determining hostile intent.

The automatic rapid fire is useful, considering the game would be impossible without it. Unfortunately it sounds exactly like a very slow marine diesel engine and soon begins to grate.

Later moments of the game include exploding phoenixes and the brilliant ruse of recolouring the alligators used in the first level to look like fire salamanders.

In playability trials between Dragon Spirit and a dead crab, 9 out of 10 game players preferred the latter. The two clear advantages of dead crabs are that they're edible and they don't try to dismember the disc drive.

Stewart C. Russell

Dragon Spirit
£19.99
Tengen

- Sound
- Graphics
- Gameplay
- Value

Overall – 49%

SLAYER

On a suicide ride



It's Denaris. No it's not, it's R-Type. No it's not, it's...

IT starts well. Like all Hewson games, Slayer has a short, inconsequential plot, which owes more to the Cliche School of Popular Prose than to any amount of imagination.

I mean, it takes a fairly wild blart of imagination to think that some contiguous luminous phosphor dots portray the elegant form of a craft capable of flying the vast distances between stars, visiting interesting planets and knocking the Reginald Maudling out of them on arrival. It does, believe me.

Whinge numero uno: The loading screen, rather than depicting the heroic although not altogether sane descent of a space fighter into some enemy ground station, looks for all the world like a early sixties jet fighter attempting to lance a boil.

Another fairly major downer is the huge great grey advert for FAST. Now I happen to like FAST, but this load of text is just crying out for some oik of a cracker to put in a pseudo-witticism about how they think that FAST aren't that great.

Right, now for the game. Take Scramble, multiply by Zynaps and divide by Denaris, and you have Slayer, give or take several orders of magnitude.

Basically, it's a fly along the tunnel shooting the assorted colours of 18th-19th century British politicians out of anything you should happen upon. At the end of the level there is a big thing that will huff and will puff and will make you implode somewhat messily.

Not merely is the scenery deadly, it gets very close together at times. It's much closer together than it should by rights be, said he engaging Incensed Reviewer Tone (which is nothing to do with Spiritual Sky Sandalwood) because we're being short changed by 56 lines again! That makes me so angry I could eat what's left of the ozone layer and still manage a couple of tins of beans for afters.

Many games have been described as addictive; Slayer is contagious. It should be locked up as far away from anything remotely computerised and left there to die.

The sound is nothing special, the graphics are equally zero-rated and the gameplay is elsewhere (in a negative sense).

If you're into awesome grossed-out pestilence, Slayer could just be your mainest groove thing. And if the rest of you are thinking that the earlier reference to British politicians of a bygone age was purely because we reviewers get paid mostly by the word, you could not be further from the truth.

It was, in fact, an ingenious descriptive link. Yes, Slayer, is the Pitts.

Stewart C. Russell

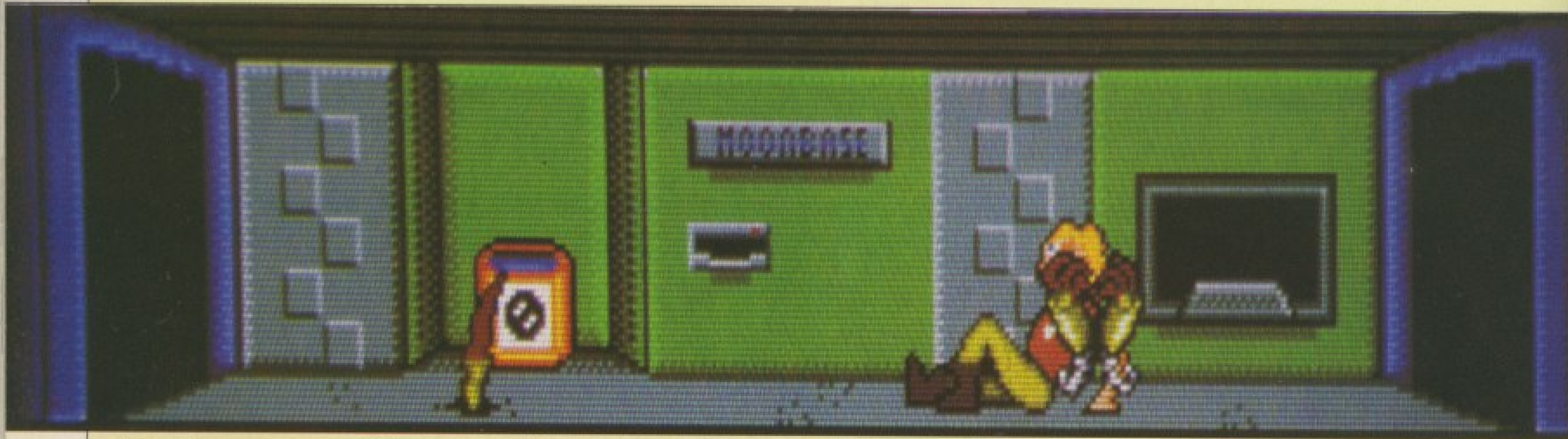
Slayer
£19.99
Hewson

- Sound
- Graphics
- Gameplay
- Value

Overall – 32%

XENOPHOBE

Two heads is better than one



Oh no, I'm gonna get eaten alive!

THE earth, which we all know and love and waste vast quantities of paper on talking about trying to save, is in a bit of a mess. And it's not really its fault either, because external forces are causing the problem.

First it was the Martian virus, then it was the satellites vanishing, and now most of the orbiting space stations have gone quiet.

From some preliminary scanning it seems that the Xenos have taken over all the bases, killing the crews.

These Xenos are repulsive. Not merely are they less than pretty, but they'll do anything in their power to get rid of anyone who is trying to get rid of them. A motley crew of mercenaries, old soldiers and psychopaths has been formed to remove the menace, but only two members of the team can be on a base at any one time.

This means that two players can play simultaneously, each using half of a split screen.

There are five types of Xenos, all of them less than pleasant, all of them the same traditional shade of green. They each cause a health drain to your character, but most of them can be got rid of with one sort of weapon or another.

Different weapons and useful items are scattered about on the floor. Some are needed to get past security systems, which have gone a little doolally with the alien invasion. There isn't any real variety in a game like Xenophobe.

Every mission looks roughly the same and there aren't any interludes where you might be able to have a slight rest or gain extra bonus points.

Basically, from start to finish it is one of the most frantic blasting games ever to appear in the arcades. There is never any time to think what you're doing and eventually the whole thing becomes automatic. There isn't the time to get bored – there's too much to do – but the competitive and cooperative element in two-player mode is frequently the only thing that keeps a game going.

Xenophobe does try, however. There's something kind of cute about the Xenos. The whole thing seems to have the menace of a marauding gerbil.

Animation is simple, but smooth. There's a cartoony air to the game. But everything's a bit small. Not merely is there a fairly large and admittedly well done Xenophobe banner at the top of the screen, but the bottom bit of the screen isn't used at all, so each player is stuck with a long strip about 80 pixels high.

In a one-player game the lower strip is blank, so only about a third of the screen is used. Mind you, the graphics are too well done for this to be YASTP.

The tunes are good. MicroStyle includes a tape of the real arcade machine's sound, and they're pretty close.

What does worry me, though, is the statement that Xenophobe embodies all that is best in MicroStyle games. If this is true, we could be looking for some quite gifted ordinariness.

Fairly good, but cigarwise it's out of the running.

Stewart C. Russell



Get outta my way or you're wallpaper

Xenophobe
£24.95
MicroStyle

Sound	
Graphics	
Gameplay	
Value	

Overall – 70%

DRAGONSCAPE

Getting in the spirit

SO there I was, reading the instructions to Dragonscape on the bus, and I'd just got to the section where it said there is a loud bang and a flash and you find yourself transported to the magical land of Tuvania, when, what do you know, there was a loud bang and a flash.

I looked eagerly out of the window, strapping on my mighty codpiece, shiny mithril armour and trusty rune-engraven quarterstaff.

Where was the mysterious land of magic and heroical conquest? To my disappointment I saw that the bus had blown a tyre, the mithril was really my sandwiches wrapped in bacofoil and the rune-engraved quarterstaff was the walking stick of the old geezer sat next to me.

I got off the bus in complete disgust, reading the rest of the instructions and muttering, "Who writes this rubbish?'

I mean, the next section went on about how you mounted this dragon called Garvan, who apparently didn't complain at all, and went off in search of the eight artefacts of Tuvania. How ridiculous, I thought, looking around me.

How many dragons do you see in Arnos Grove? I mean, you can go for days without seeing a human, never mind a dragon.

By the time I got home I'd sussed out that you were supposed to fly around on this dragon's back, collecting artefacts one at a time and depositing them on top of an associated icon. Do this with all eight and you were magically transported to the next dimension, there being four dimensions in all. Complete them all and the land is saved and you can re-format your disc or sell it to Dodgy Darren down the market.

Hmmm, despite initial scepticism, I was ready to experience the world of Dragonscape, I was ready to mount that dragon, to collect artefacts and torch any one that put his ugly face anywhere near my dragon's snout.

I connected the alcohol drip, sat in the specially moulded chair, slid the disc into the drive, and bellowed, "Hit me!" My brother promptly thwacked me across the pate with a meat tenderiser.

And there I was, floating along on a dragon torching any sucker that got fresh, while figuring out which object went with what.

The shining mithril armour was there again, but hang on a minute, I thought we were supposed to be scouring a medieval landscape, a fantasy land.

What's the first dimension? A printed circuit board, with radios, batteries, satellite dishes and bombs as the artefacts and matching icons. Erm, erm, something isn't quite right here.

Still it's not that hard as long as you keep refreshing your dragon spirit by running over the P icon that floats around.

Aha, the next dimension is more like it. Invisible traps that stop the dragon in its tracks, ugly alien type things, proper artefacts, and a nice blasted wasteland for scenery.

If the first dimension was very straightforward, just time consuming, this one was downright unfriendly. There were people and monsters and strange blue things shooting at me.

And umph!, who put that force field there, just as a horde of blobbos were swarming. Aaaarrgghh.....

Later I regained consciousness, the drip hanging loosely by the chair, contents exhausted. Was it all a figment of my computer? I checked the bacofoil and deemed that it was. But it was a reasonably satisfying experience I thought. Maybe, I'll try it again.

Duncan Evans

DragonScape
£24.99
Wicked

Sound	■■■■■■■■■■■■■■□□□
Graphics	■■■■■■■■■■■■■■□□□
Playability	■■■■■■■■■■■■□□□□□
Value	■■■■■■■■■■■□□□□□□

Overall – 72%



This Clifford obviously doesn't use Listerine



Looks like a dragon, moves like a dragon, steers like a cow

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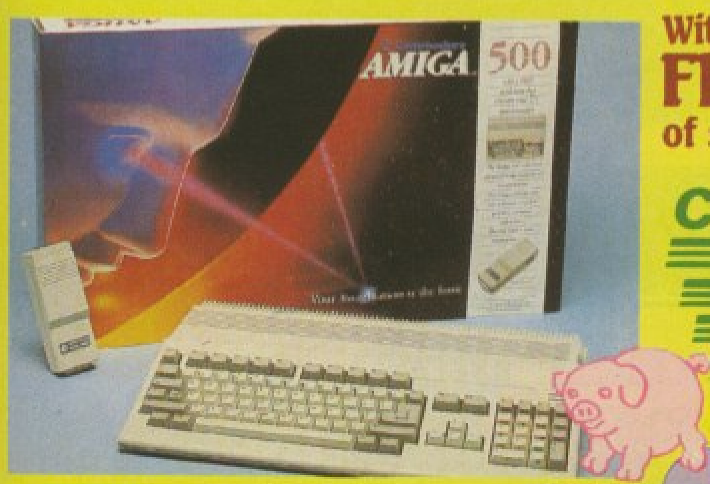
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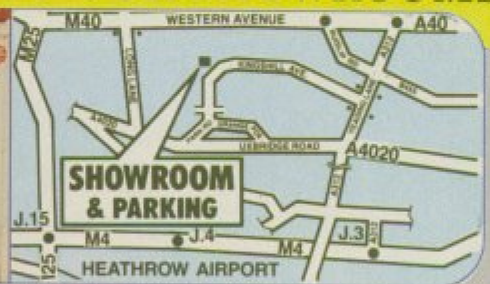
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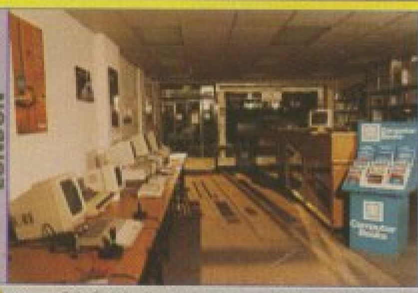
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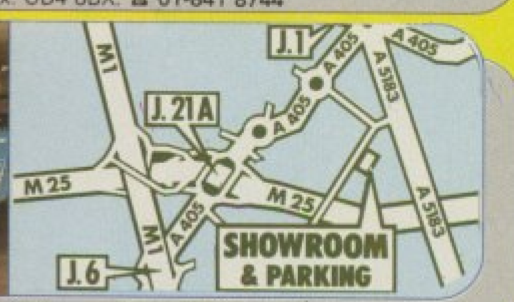




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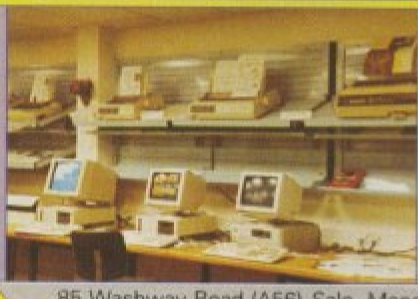
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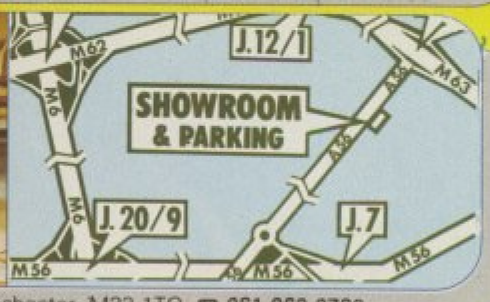




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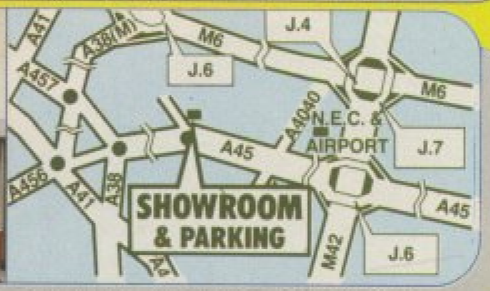




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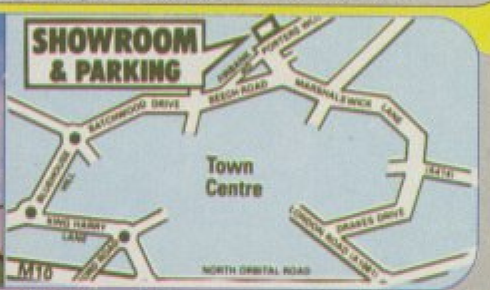




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LANCASTER

A gunner's dream

WHERE does Second World War mania come from? There are far too many simulations of aerial combat around, and Lancaster is yet another. What is wrong with the distant past or the future? Couldn't the format of Theatre Europe be built on?

After a black and white loading screen, coupled with loud and nasty stereo sound, a menu screen with about 20 buttons and a wobbly pointer appears. The buttons select everything from cheat and demonstration modes to the time of day and whether barrage balloons are present or not.

With this negotiated, you pick one of three pilots, watch the flight crew enter the plane outside the hangar and bang the hatch shut, switch to it taxiing out of the same hangar, then watch it take off along a green runway.

Once airborne, the scene switches to an excellent map of South East England, then to one of France or Germany, with the plane's progress and the target marked.

Before long a voice screams that an attack is about to take place. Messages flash on screen. You are given a view out of the tail gunner's dome – shoot everything on sight, the little arrows with AIM marked on them pointing to the barrage balloons leave you in no doubt as to in which direction your bullets would be best fired.

After many ambushes you switch to a view of your target from above and get the chance to drop the most destructive bombs ever – when one hits a building, it vanishes without a trace.

You then struggle back home, avoiding more ambushes. If you are hit, the plane slides gracefully to the ground, bursts into flames and your pilot records are displayed with "File closed".

Graphics are of variable quality. On the menu and introductory screens they are very detailed. On some of the take-off and landing screens – especially the view from above of the sight to be bombed – the graphics are solid and extremely blocky.

In one case you are whisked from a hi-res view of the plane with propellors spinning into lo-res where there are no propellors to be seen.

The combat screens are a mixture of detailed control panel and blocky view with some of the graphics looking like products of a modelling package. Enemy planes trail smoke and spiral realistically before plunging to earth. Complete chaos is simulated well.

The sound effects are poor. The voice is very hard to make out. Other effects are nothing special.

Despite these reservations, the hackneyed subject matter and the mistakes, Lancaster is a pretty good example of its type.

Based on the missions of the famous bomber plane, it is in the usual Amiga Epic format – combat scenes linked via much groaning from the disc drive with pretty graphics and animation, colourful maps, menus and fanfares.

It is not a bad game. At least the authors are honest enough to point out where the simulation departs from complete historical accuracy.

Alastair Scott

Lancaster
£24.95
Actual Screenshots

Sound
Graphics
Gameplay
Value

Overall – 53%



All together now: Who do you think you are kidding Mr Hitler...



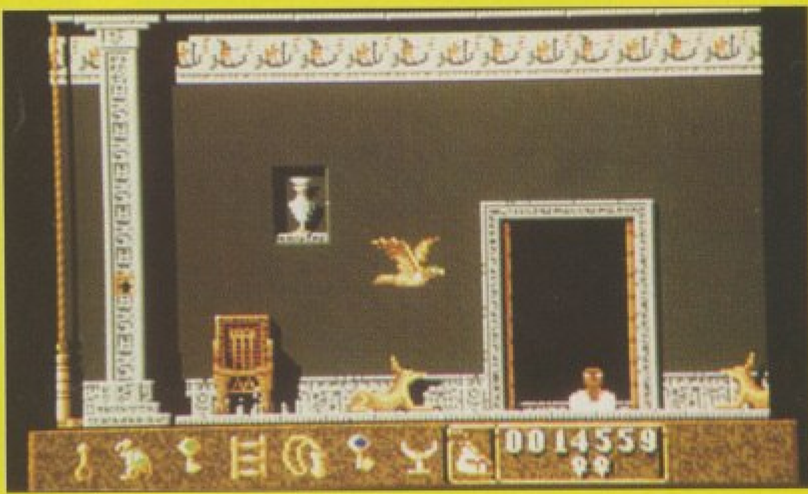
Those three planes top left are your lives. You can shoot them down if you want



Mother will they drop the bomb?

EYE OF HORUS

Discover the secret of the pyramid



I didn't know you had dandruff. I don't, I use...

BEHOLD! The Tomb of the Unknown King reaches up, yes, towering up even on to the heavens. The tomb stands silhouetted against the setting sun, flanked only by palm trees bent in homage.

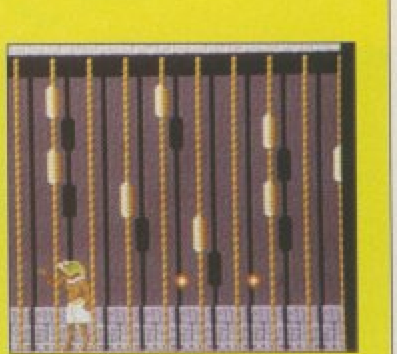
You can almost hear the wavering strains of Wish You Were Here drifting across the mighty, turgid Nile, swollen with the tears of the damned.

I, Horus, son of Osiris the King of Life, bid you welcome and trust you can aid me in my quest. Many thousands of souls are crying out in torment, awaiting release from their underground prison. The evil god Set, embodiment of darkness and general bad egg, hath scattered the dead King's body unto the far corners of the huge tomb.

I am bound to gather them unto themselves and make them whole once more. When I have achieved this task, Osiris will grant me great strength and that dog-breath Set will be banished to eternity, forever.

Having a godly aspect, I can assume the form of a hawk to fly between the chambers of the tomb in search of the dismembered parts. But curse that snake-loving Set! He hath cast a spell upon the hieroglyphs that bedeck the walls of the chambers. They swarm around in the form of many small animated sprites, sapping my life force and inconveniencing me something terrible.

Thank mother Isis for the many amulets scattered around the tomb, frequent as the morning dew. The magic contained in these charms will help me greatly, providing great strength and mysterious companions. The many rainbow



Pull the other one, it's got bells on

coloured keys will grant access to locked chambers by way of the lifts, driven by a mysterious and ancient power source.

The enormity of my task overwhelms me. Even an immortal one as myself is temporarily stunned as the size of my mission is revealed. How many more chambers have been encased in this giant sandstone sarcophagus? How many eons will it take to fully explore this dark, stone underworld?

But now my memory plays tricks on me. Is this a previous reincarnation? Have I been called Roland in the Caves in an earlier life? No, the memory passes and fades into oblivion as the haunting music engulfs me...

John Kennedy

Eye Of Horus
£24.99
Logotron

Sound
Graphics
Gameplay
Value

Overall – 71%

SWITCHBLADE

Hiro today, gone tomorrow

EVIL lizard things are swarming all over the place. There's only one way to stop them and there is only one man for the job. Hiro.

Collect the 16 pieces of the ancient fireblade and you can be a real hiro, sorry hero. Avenge the death of the other Bladeknights and save the undercity from Havok's reign of havok. Might as well, there don't seem to be many pubs about.

The whole game is done in the style of those terrible new Japanese cartoons that you might catch a glimpse of if you wake up too early on a Saturday morning. You know the sort of thing, with robots that turn from Cappucinno makers into ICBM's in the flash of a screen refresh.

In the tradition of the Bladeknights, Hiro has had bits of his body chopped off and replaced with velly reriable cybernetics.

Exploring the undercity where the required blade bits are to be found is made harder by the fact that the screen only displays places already visited. This means many passages have to be actively searched for behind the boxes and tubes that litter the underground alleyways, which lends itself more to an adventuring feel than arcade blasting action.

The only real arcade elements are the biped alligator things that have to be despatched incessantly.

Despite having cybernetic limbs, Hiro hasn't got much in the way of

Switchblade
£19.99
Gremlin Graphics

Sound
Graphics
Gameplay
Value

Overall – 79%

arms. He starts of with bare fists and feet, which are effective only against the hedgehogs and minor beasties on the first level.

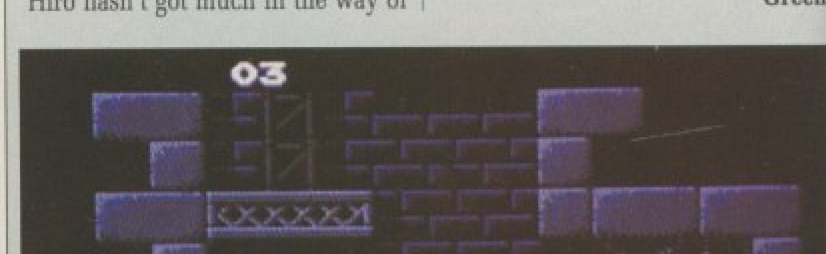
You will need to pick up some more advanced weaponry, widely available by punching open certain rocks or by taking a quick sortie behind the packing crates. Various devices will be uncovered which may look painful, but they suit Hiro fine.

The philosophy is never to take anything at face value. That might not be a solid brick wall over there. That might not be a vicious alien advancing to savage you – he might want to throw fireballs at you first.

Graphics are smooth and well animated, though not overly imaginative. The shadow effects in the lower digestive tracts of the earth are nice, as are the occasionally flickering lights.

Addictive, if not state of the art, and enough puzzledom to last a good while.

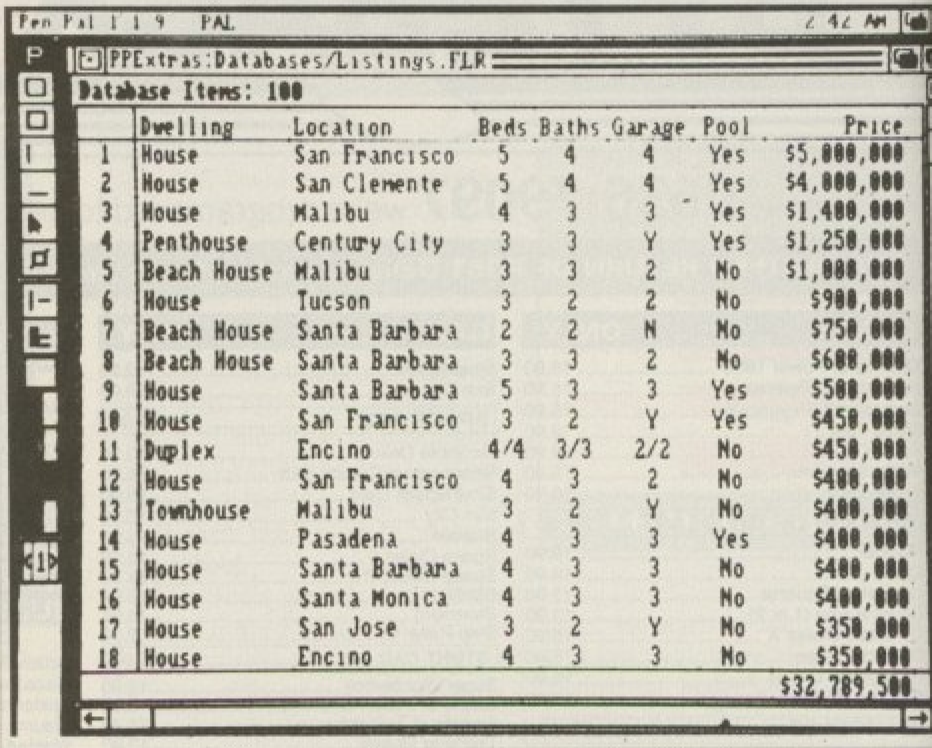
Green



Examine everything, there are hidden objects and hidden exits all over the place

Dear Prudence

Rupert Goodwins wants to be a paperback writer and wonders if Pen Pal is all he needs



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7	Beach House	Santa Barbara	2	2	N	No	$750,000
8	Beach House	Santa Barbara	3	3	2	No	$600,000
9	House	Santa Barbara	5	3	3	Yes	$500,000
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15	House	Santa Barbara	4	3	3	No	$400,000
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18	House	Encino	4	3	3	No	$350,000
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As well as a word processor you get a simple integrated database

ONCE upon a time there was the typewriter. Press the buttons and the letters appeared on paper. Most word processors are like that. Even with the addition of spelling checkers and other magic, they are still typewriters under the skin.

Lately, with the advent of desktop publishing, graphics have become part of some word processors. But there's been little to stretch the parts of the Amiga that other computers cannot reach.

Pen Pal is an attempt to change all that. It's an Amiga-only word processor, but instead of conforming to the word processing rules it takes the features and potential of the machine to provide one of the most innovative and well thought out user interfaces to be found on any program on any computer.

As well as normal word processing functions, it also crams in simple drawing, graphics and database features. There's a lot to it.

Starting it up gives little indication of the depth of the program. At first it looks like any of umpteen packages – tools down the left hand side, menus along the top, scroll bars surrounding a large, blank area where your text will shortly appear. Nothing spectacular, except that it uses a PAL screen.

It's when you move the mouse around that things start to pop. As your strangely bent pointer glides over tools or areas, a box appears giving the name of the option beneath. A few minutes playing with the first window proves that Pen Pal uses Intuition – front-to-back and resizing behave exactly as they should. Any remotely experienced Amiga owner will feel at home.

Text appears in 11 point Topaz, the default font we're all used to. Everything on screen reflects exactly what will appear in the final document – the infamous wysiwig – and selecting a new font or a new style produces precisely the expected effect. Font selection is particularly clever in that it allows you to choose the size first and then the font to fit.

Pen Pal can import, and subsequently print, any IFF picture, including HAM ones. It handles them in the usual manner of letting you draw a box into which pictures can be placed. It's happy to let you force the graphic to fit the space, or just do a best fit without distorting the proportions of the picture.

I was impressed by the way anything I wanted to do just fell to hand without my having to go off and look up whether it was possible.

Pictures are displayed in eight colours. Pen Pal makes an attempt to map others, but with HAM stuff it merely shows a black blob. Graphics can be grouped together, locked into place and have text flowed around them.

Whatever mishandling the picture suffers, Pen Pal stores the original internally and uses the resolution and palette it knows about to give the best possible results on printing.

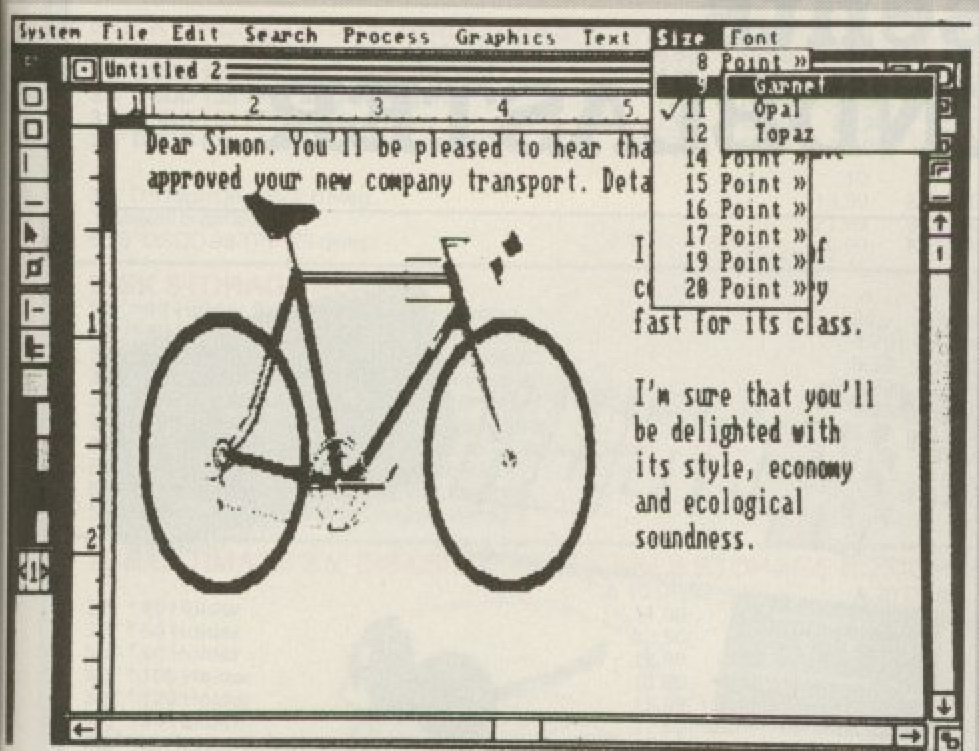
With the Forms Fill In option you can use the drawing tools to create a form, and the computer will then refuse to let you type in text anywhere but in the permitted fields.

The graphics tools arrayed down the screen are simple. Line drawing and box creation, with some fill options, will produce most of the layout tricks you'll see in professional publications. If you want more than that, draw whatever it is in your favourite paint program and import it. Things created with the Pen Pal facilities can be resized, moved around and adjusted ad infinitum.

The spell checker has some 100,000 words – all of them American. Although it works well enough, I got confused by the options. I told it to start spell checking from the top of the document but it started from the current position of the cursor and worked its way up.

And the program doesn't understand ram discs. It always thinks that the ram disc is completely full and can't accept any more.

But the help system is a real winner. It's got lots of text on most features, arranged so that it's as easy to browse through by clicking on entries as it is



Font selection allows you to choose the size first and then the font to fit

to find a given feature.

The text is a model of clear, concise, relevant information. It is not necessary to refer to the manual for 90 per cent of queries. Given that Pen Pal isn't copy protected, this is a courageous move, and one that I warmly appreciated.

To save space on the master disc the printer drivers are held on the second disc and a small program is provided to copy just the one you want. Painful, since you have to type the name of the driver exactly, and printer drivers tend to be more incomprehensible than a Polish street map.

That done, Pen Pal itself knows how to read the installed driver and uses that data to set up various things inside itself to do with graphics printing et al. It will either print full wysiwig or use the printer's own fonts to speed up pure text output. When doing Amiga fonts it takes about four seconds per line of text on my 80 cps Epson-compatible dot matrix printer.

I immediately felt at home with this program. Other things worked well – hard drive installation on an A590 was easy and the various hotkeys are well chosen.

There are downsides. One is speed.

In common with many wysiwig editors, Pen Pal can be diabolically slow when doing large, on-screen text operations. Three seconds to paste a 30 word chunk into a 200 word paragraph.

The worst problem I encountered was while testing its large document capabilities. I tried to feed it a 30,000 word Ascii file, some 170k. After 10 minutes of flashing its very pretty Please Wait icon at me, it died.

Now, I wouldn't have minded had it taken one look at the document and told me to go away and find something smaller. I wouldn't have minded as much if it had chuntered away for a while and then said "Burp – I'm full" and let me recover. But on a multi-tasking machine it's not the done thing to gracelessly collapse.

Because I tend to write plain text, and lots of it, it's not going to be my personal favourite word processor, mostly because of its lack of speed.

I'd recommend it, though, to anyone who wants a fully-featured Amiga word processor to write small to medium documents, do simple newsletters or just the normal, domestic writing that the Amiga should excel at. Pen Pal makes all these things fun. It's nearest rival is Kind Words which although half the price doesn't have the database features, nor the ability to use HAM pictures or standard Amiga fonts.

Data basics

PEN PAL'S database is interesting. It is really a list manager rather than a full-blown database. It accepts information in various formats, can sort it, merge it with your text, print it out in label format, add up figures – all of the things that a computer really ought to be able to do.

Defining a database takes place in a standard Amiga requester with lots of fields to chose from. Data can be text, numbers, currency (Pen Pal helpfully supplies a dollar sign), dates, times... there are even picture and sound types.

These are there partially to maintain compatibility with an earlier database written by the same people and partially because future Pen Pals will be able to display pictures in the database. Neither field type does anything at the moment.

The definition process creates a list of fields into which you can type your data. Once you've entered it, you can order everything alphabetically, by date, or by any other field.

This done, you can create what Pen Pal calls a View. This is a particular set of things you'd like doing to the database – sort in a certain way, prepare the data in columns – and you can have more than one View per database, so you can display or use the data in various different ways with minimum effort once you've set up the details.

It's simple and very fast. A 100 item database can be searched or ordered in a couple of seconds.

REPORT CARD

Pen Pal
Brown-Wagh/Data Liberation
(0983) 405600
£129.95

EASE OF USE....
Correct use of Amiga menus and requesters helped by intelligent design and an install program.

SPEED................
Wysiwyg needs processor power, and even helped by the blitter, mixing fonts with colour graphics is slow. Printing speed and quality are helped by using the printer's own fonts.

VALUE................
For a database and wp this isn't too steep, but £130 less discounts is a lot to shell out in one go.

OVERALL 78%
A good product, which is well written and deserves to do well, but will probably suffer because of the price.



Trip-a-Tron for light relief

Nic Veitch floats down through the clouds to spill a saucerful of sequences

WELCOME my son, welcome to the Trip-a-Tron. It is with this name, that seems to pay homage to a hippie's favourite pastime and an obscure early synth favoured by certain psychedelic groups, that cultural guru to the enlightened, Jeff Minter, has deemed to bless his latest venture into light synthesisers.

It all started on the humble 64 with Psychadelia, which returned in cut down form in Battalyx, his concept compendium. Then, in a fit of madness perhaps, he transferred his attention to various shades of Atari and produced Colourspace. Driven on by little voices in his head, or perhaps his ashtray, he has finally produced Trip-a-Tron for the Amiga.

The less hip and with it of you may be wondering what all this light synthesis is about. Well, without getting too uncool and heavy, it is just like a music synth except instead of sonics you will be painting real-time swirling universes of pixels which expand and metamorphosise and decay throughout a multi-verse like a million bright ambassadors of morning. Got it? Good.

Now that that's settled, the show must go on. The first thing it is advisable to do when coming into possession of Trip is to make a really strong cup of tea, pull up beanbag and study the manual very carefully. This is actually quite a pleasant experience, since it is entertaining and informative at the same time, simultaneously even.

THIS cunning little volume comes in the form of an attractive filofax style bundle, the only regret being that it doesn't have an afghan cover. Many questions relating to possible stumbling points are answered early on like why it is called a light- synth and not a light-ukulele. Tricky one that.

Dudes who recall earlier versions will be pleased to learn that you don't have to get too far into it just to have a good time – just load up the demo files and have a play with the mouse. Pressing a button does something and moving the mouse does other things and everything is green and submarine. This is fine, but a new world unfolds for people who take their freak-out weirdo stuff seriously.

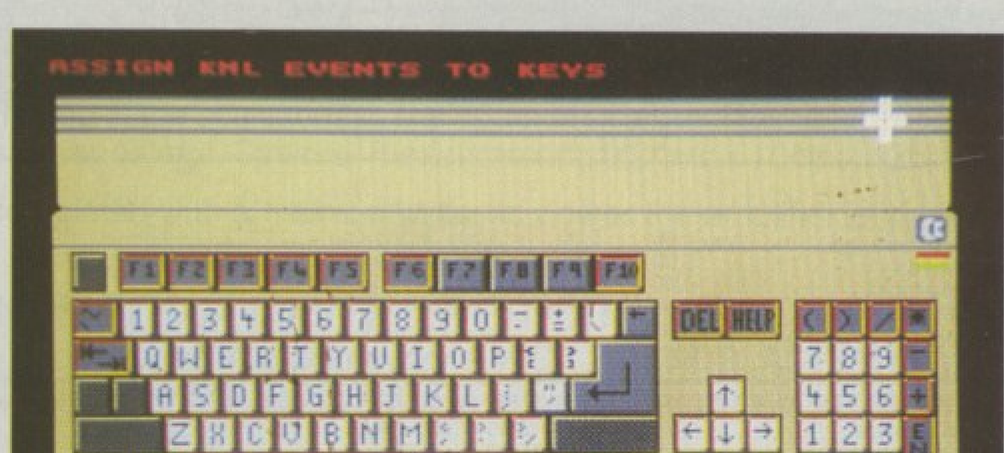
The foundation llama...sorry, stone for all this is the language KML (yes the name does have a strange sound to it). KML is a cunning piece of mental engineering that allows you to program in your own effects.

It is, obviously, specially written for this sort of application and has many advanced brain-disintegrating features and commands. Up to eight programs may be run simultaneously by pressing corresponding (and programmable) keys during the performance phase.

The program can integrate and run effects and graphics designed with the other modules in the package, so in effect you can create a whole show which runs itself at the touch of a button.

THE programming environment is not state of the art wimp stuff, but is quite friendly and simple and displayed in a very legible font, which is the most important thing. Line-entry syntax checking should remove most potential bugs.

A sequencer module allows you to pre-program effects to occur at exact instances in a defined sequence. This supports both real-time recording and



Keyboard definition ties the keys to the programs you write

editing functions, allowing highly complicated combination of effects to be produced. You pick the place and then chose the time and it does its thing in its own way.

Starfields *á la* Star Trek, are available with controls for adjusting everything from trace length to angular velocity. Set the controls for the heart of the sun!

The sillyscope is the realm of waveforms, both default and user defined. They are used to control the laser-like effects you will see roaming around the demo.

It is hard to categorise something like Trip and therefore hard to measure it against anything meaningfully. It is out front in a field of which it is the sole inhabitant.

You don't have to spend hours pouring over the manual, you can certainly have as much fun with it as you would with Colourspace by just using the default settings and ignoring KML, but just as musicians love Midi and programmable synths, light artists will find more scope for expression with a programmable light synth.

In entertainment terms it is certainly worth more than its weight in tropical plant cuttings. It is nice to see that computers which rose out of what was basically hippy technology in the sixties have now got back to grass roots and repaid their debt to those attuned to a higher level of sensation.

Finally, it is hard to write about a Llamasoft product without letting the last word be something *awesome.*

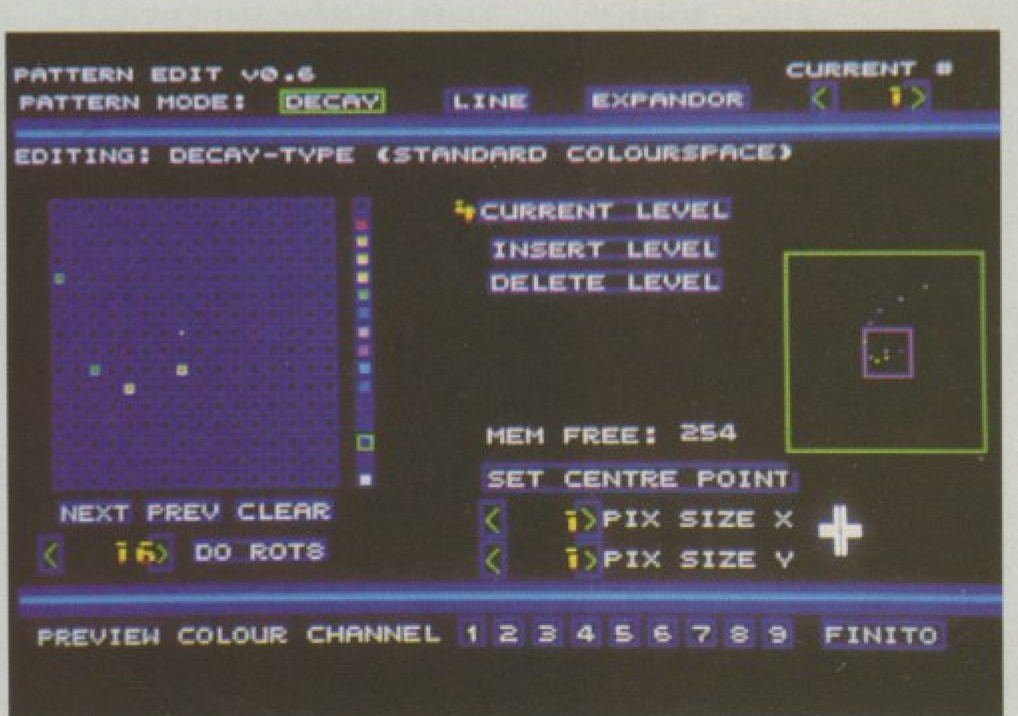
Hippy hippy shake

VSEQ is a (fairly) normal sort of picture squirming manipulation thingy. It takes standard IFF files and also uses its own run length encoded format. Various cunning effects like de-res, rotation, filtering and many,many more are available but it can take a while.

Thoughtfully a graphic is included to tell you approximately how long the process is going to take by way of giving you little messages like "Go make some tea" or "Go to the boozer" or as in the case of something adventurous I tried recently, "RIP".

Finished frames are once again called by a KML macro. Since everything interacts in this way there is a nice feel of building something solid from the bottom up. The other colossal advantage of this is that it is not necessary to become intimately familiar with each module before producing something brain damaging, you can take it at your own mellow pace.





The pattern editor forms an interface between your mind and the machine

REPORT CARD

Trip-A-Tron
Llamasoft 073481 4478
£34.95

EASE OF USE....
Some advanced features can be a bit tricky at first. Mouse detection suspect in parts but everything is FUN.

SPEED ....
Multi-tasking macros seem to work well. Video effects take time, but don't they all?

VALUE ....
Have you seen anyone selling one cheaper?

OVERALL 83%

Some serious messing about made possible. Minter ought to get a medal.

Revenge the rom

DEMO writers have a very bad reputation among "real" programmers. They are accused of being OS destroyers, illegal coders and of perpetrating the worst of all possible crimes, jumping into the rom.

This bad press is mainly due to the antics of obscure German coders and crackers – hackers is the wrong term to describe these people because they don't break into large computer systems, their only interest is in writing demos and, for some of them, removing protection from games and spreading these "cracks".

Typically these crackers write a demo using the K-Seka assembler – because it is the most similar to the assemblers they used on the C64. They will put in enough code so that it looks like it works and then bung it in the post next morning to all their friends.

There is nothing wrong in programming like this if you are just writing a demo for you and your friends. In most cases the authors of these demos do not expect them to end up in public domain libraries or reach the general public.

The problems begin when these coders find that after writing a few demos it is quite easy to write a game. But do they make sure that it works properly on all Amigas? No.

It therefore seems an obvious thing for all coders to stick to the rules, especially new coders.

NOWADAYS the problem lies not in whether to obey the rules or not, but what the rules exactly are. If you take Commodore's words on the subject you might think that everything you do has to be done by using libraries and devices, not touching anything low level like the custom chips.

Of course, Commodore does not mean this. What the boffins there point out is that as the Amiga is a multi-tasking machine, if you don't access it via the operating system the Amiga will not be able to cope with handling all the different tasks – trying to take over the screen, trying to read the keyboard at the same time, trying to use any other aspect of the Amiga's input or output.

In this respect using the operating system is the only way to program the Amiga. But that is only if multi-tasking is necessary for your program. If you try to make a game multi-task you will soon get rather annoyed when it slows down or stops each time you put a disc in the drive or move the mouse.

Commodore built two library functions for people who do not need to multi-task – Forbid() and Permit(). **Forbid** turns off multi-tasking, so any other tasks running are suspended, giving your program 100 per cent of

```
                                  ; Written with Devpac v2.14.
        section base,code c       ; Put into chip memory.
        opt     c-,o+             ; No case sensitivity, optimize on

        move.l 4.w,a6             ; Get execbase.
        jsr -132(a6)              ; Turn off multi-tasking.
        lea     gfxlib,a1
        moveq   #0,d0
        move.l  4.w,a6
        jsr     -$228(a6)         ; Open graphics library.
        tst     d0
        beq     error
        move.l  D0,gfxbse
        move.l  #screen,d0        ; Store screen address in copper list.
        move.w  d0,pl0l           ; That's pee ell zero ell.
        swap    d0
        move.w  d0,pl0h
        swap    d0
        add.l   #10240,d0         ; Size of one bitplane.
        move.w  d0,pl1l           ; Second bitplane (pee ell one ell).
        swap    d0
        move.w  d0,pl1h
        move.l  gfxbse,a6         ; Set up copper list.
        add.l   #$32,a6
        move.w  #$80,$dff096
        move.l  (a6),oldcpr       ; Store workbench copper list.
        move.l  #newcpr,(a6)      ; Use our copper list.
        move.w  #$8080,$dff096
        move.w  #$8010,$dff09a    ; Enable level 3 interrupt.
        move.l  $6c.w,old         ; Store old level 3 interrupt.
        move.l  #new,$6c.w        ; Use our interrupt.

* All we have to do now in our main program is wait for the mouse button
* to exit. All the interesting stuff is done by the interrupt we set up.

wait:   btst    #6,$bfe001        ; Test for left mouse button.
        bne.s   wait              ; Wait if not pressed.
        move.l  old,$6c.w         ; Else return to workbench.
        move.l  #$10,$dff09a      ; Disable copper interrupt.
        move.l  gfxbse,a6         ; Copper list.
        add.l   #$32,a6
        move.w  #$0080,$dff096
        move.l  oldcpr,(a6)
        move.w  #$8080,$dff096
        move.l  gfxbse,a1         ; Close graphics library.
        move.l  $4.w,a6
        jsr     -$19e(a6)
        move.l  4.w,a6            ; Execbase.
        jsr     -138(a6)          ; Permit() - restart multi-tasking
```

the Amiga to play with. **Permit()** turns multi-tasking back on again for when you exit your demo back to CLI.

Once you have turned off multi-tasking it is perfectly safe to "hit the hardware", assuming you do this in an orderly fashion and clear everything up before returning to AmigaDos.

Whatever you are writing, a demo or a game, you have to follow a standard set of instructions to kill the system, set up your screen and everything else your demo needs. I have written a file called BASE.S (Listing I) which I use for the basis of all my productions.

It starts by opening the graphics library. Although I do not use any graphics library functions in the program, I need the address of the library to tell me where the workbench copper list is stored.

I then have to create my copper list. The main problem with my copper list is that I do not know where my bitplanes are going to be in memory because AmigaDos will load this file into whatever chip memory it can find.

Some less-experienced coders think that they can take a piece of memory, say at $70000, clear that and use it for their screen, regardless of whatever else may be there at the time. While that will work most of the time on a 512k Kickstart 1.2 Amiga, it will generally fall down on any other system. If you have anything else in memory before running, it probably won't be there much longer.

Obviously this is not a very good idea, although I still keep coming across people who do it.

What I do is to put zero into the bitplane addresses in the copper list – $e0 to $e6 in the example listing – work out the addresses of where my bitplanes are, and stick it into the copper list. MOVE.L #screen,d0 gets the screen address, and then it is transferred into the relevant places in the copper list a word at a time.

of jumpers

Jolyon Ralph addresses the problem of politely trashing the operating system

```
error:  moveq #0,d0                 ; Exit routine.
        rts

new:    movem.l d0-d7/a0-a6,-(sp) ; Save all registers.
        and.w   #$10,$dff01e      ; Check if it is copper interrupt.
        beq.s   out               ; If not, skip this code.
        move.w  #$10,$dff09c

* This interrupt code is called once every 50th second (on PAL machines)
* until the left button is pressed and the interrupts are disabled.

        addq #1,col0              ; Change the foreground.
        subq #2,col1              ; Change the background.

out:    movem.l (sp)+,d0-d7/a0-a6 ; Restore registers.

* The following JSR instruction ($4ef9) is altered by the beginning of
* the program. This sort of self-modifying code is frowned upon by "real"
* coders, but it doesn't half work a lot easier than any other method.

        dc.w    $4ef9             ; JSR instruction
old:    dc.l    0

oldcpr: dc.l    0                 ; Workbench copper list

newcpr: dc.w    $100,$2200,$102,$0,$104,$a,$108,0,$10a,0
        dc.w    $92,$38,$94,$d0,$8e,$2c81,$90,$2cc1,$e0

pl0h:   dc.w    0,$e2
pl0l:   dc.w    0,$e4
pl1h:   dc.w    0,$e6
pl1l:   dc.w    0,$180            ; Foreground and
col0    dc.w    0,$182            ; background colours.
col1    dc.w    0
        dc.w    $9c,$8010         ; Call copper interrupt.
        dc.w    $ffff,$fffe       ; End copper.

gfxlib: dc.b    "graphics.library",0

        even

gfxbse: dc.l    0

screen: dcb.b 10240,%10101010     ; Screen full of lines.
        dcb.b 10240,0             ; Screen blank.

        end                       ; End of listing.
```

WITH this method, not only are you guaranteed not to rub over something that is already in memory, but it will work regardless of where it is in chip memory.

The easiest and cleanest way of setting up a copper list is to put your list address into the Workbench copper list address pointer – part of the graphics.library structure. First you must save the current value of this pointer so it can be restored on exit.

One odd command you may notice in my copper list is $9c,$8010. This generates a level 3 copper interrupt. What is a level 3 copper interrupt, I hear you ask? Well, it's funny you should ask because that's what I'm going to talk about next.

Anyone who has programmed inferior processors to the 68000 series

➤

➤

– like the 6502, Z80 or 80386 – will surely have come across interrupts at one time or another. Basically, an interrupt stops the execution of whatever the processor is doing at the time and makes it go and run another routine before returning to carry on with what it was up to in the first place.

What this means in practical terms is that the main program can just sit and wait for the left mouse button to be pressed while the interrupts go off and do all the clever work.

THE nice thing about interrupts is that they are called at regular time intervals, in this case every 50th of a second. This means you can write a routine which moves a series of sprites, for example, around the screen by one position. As the routine is called every 50th of a second it gives the illusion of smooth movement.

You will find these interrupts referred to as "exceptions" in a lot of literature because Motorola decided to be different to the rest of the universe, which calls these things interrupts. As interrupts are interrupts whatever type of processor you are using, I will continue to call them interrupts. There is no need for companies to add to the list of computer jargon unnecessarily.

In Listing I you can see how to set up the simplest type of interrupt, the level 3 copper one.

The Amiga system uses level 3 interrupts for all sorts of things. They are generated when a new disc is inserted, for example. Therefore we must be careful not to trash this interrupt and allow the system to carry on its necessary interrupts after our program has finished.

This system interrupt routine is at a fixed routine in rom. I could tell you where this is, but as it changes from version to version of Kickstart, we will have to work out where it is instead.

As it happens, it is very easy to find out where this routine is – you just read the contents of $6c in memory. To set your own interrupt routine you have to write the address of your routine into $6c and enable level 3 copper interrupts.

This is done by moving $8010 into $dff09a (INTENA). From then on, any write of $8010 to $dff09c (INTREQ), the interrupt request register, will cause the CPU to jump to the interrupt routine pointed to at address $6c. The copper move $9c,$8010 creates the desired effect.

OUR interrupt routine begins with a MOVEM instruction that saves all the registers on the stack. It has interrupted the 68000 at an unknown point in our main program. OK, our main program is only two lines long this time, but it is a good idea to get into good habits and save *all* the registers at the beginning of an

➤

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Crash Smash 91%, CU 90%, Amiga Format 87%, TGM 85%

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interrupt. The next three lines determine whether the interrupt has been generated by our copper list or not, because level 3 interrupts can be generated by other system functions as well.

If it is not a copper interrupt, then the interrupt is passed on to the original interrupt handler routine in rom. This is done by a direct jump at the end of the interrupt routine. However, this interrupt address is calculated by the program and will be correct for whatever version of Kickstart you may care to use.

We then have space for our interrupt code. In this example we are just changing the foreground and background colours by -2 and 1 respectively every 50th of a second, hence the colourful effect.

After our lines of interrupt code we jump into the level 3 routine in rom, just in case the rom routine does anything important. I don't think it does in Kickstart 1.2 or 1.3, but it doesn't do any harm to jump in anyway, and it may be necessary for future Kickstarts.

Now we move back to the main code and, assuming you have got bored of the Jeff Minter style colour changes and have squashed your mouse button, the program carefully shuts down and rebuilds AmigaDos for you.

FIRST we put our old level 3 interrupt address – the rom address we read from $6c earlier – back into $6c. For good measure we then disable copper interrupts, as we like to return things to the way we found them.

Next we put our old copper list address back into the Workbench copper list pointer. This re-enables the good old CLI screen. We close the graphics library we opened earlier and re-enable multi-tasking with a Permit(). Now we are ready to return to CLI. The last thing to do is clear d0 – MOVEQ #0,d0 is faster way to do it than CLR.L d0.

When a program exits to CLI, the value in d0 is returned as the error code. It is a good way to pass parameters back to the CLI, but we don't particularly want an error code with our demos.

Then we RTS and return back to AmigaDos. If you find that it doesn't work and you get the good old strobing power light and red boxes, then you know that it's your code at fault.

With this routine set up, all you need to change each time is your interrupt routine, the copper list and the number of bitplanes you initially set up.

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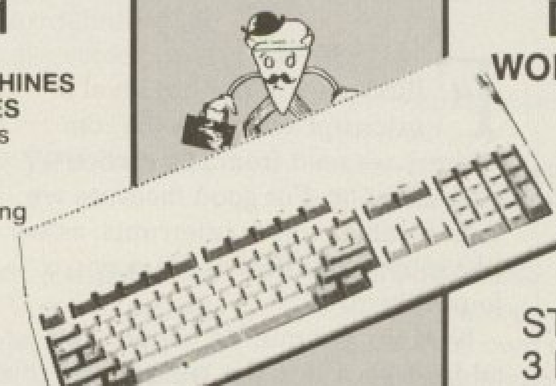
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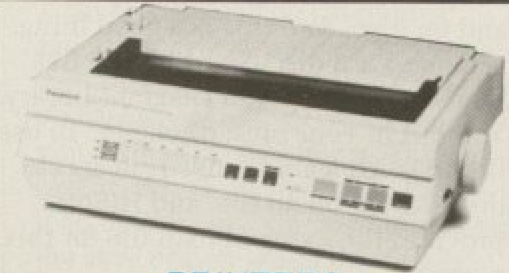
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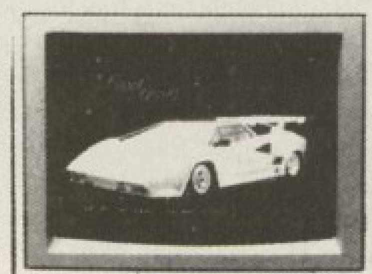
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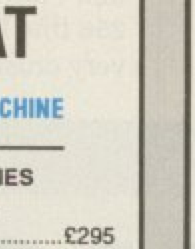
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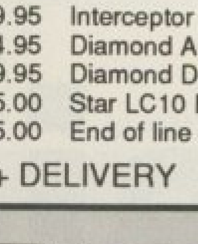
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Extend your Basic

Anyone who has played with AmigaBasic for more than five minutes will know that it has a few bricks missing. Stewart C. Russell looks at a package which sets out to fill in the holes

AMIGABASIC works – and that is about all that can be said of it. It will do what you ask, but only if it really feels like it, and it will never do it nearly as fast as you'd like it to.

It's hardly surprising then, that a variety of other Basics have sprung up; compiled ones like HiSoft Basic Compiler and interpreted ones like GFA-Basic, which now has a separate compiler. But they aren't cheap, so what the world in general has been waiting for is an extension library which gives AmigaBasic what it should have had all along.

The waiting is now over. HiSoft, in conjunction with SunSmile Software in the States, has released Extend. This wondrous wad of longwords won't actually make the daily running of AmigaBasic any quicker – what it does is to allow the Basic programmer full access to Intuition without having to open every Amiga library in rom and on disc. And this is a good thing.

Extend is a disc-based library like Translator.library and Diskfont.library. You put in your Libs: directory. To use libraries AmigaBasic needs to access the relevant bmap file, and HiSoft provides the Extend.bmap file for this purpose.

The usual problem with using library functions and routines from Basic is that they need oodles of code to get them working. Basic and C variable types are different, one tiny error in the protocol will result in a Guru. Believe me, I know – I've been there.

Extend v1.3 contains 50 functions and subprograms. The majority of them deal with menus, requesters and gadgets, while some others deal with fonts, IFF and scrolling. The latter might seem strange as AmigaBasic does have a scroll command; unfortunately it is bugged.

If you've ever tried loading and saving IFF screen images from Basic you will know how difficult, and above all, slow it can be. Extend's SaveIFF routine saves the day. A 16 colour med-res display can be saved to ram about 60 times faster than a Basic routine would. SaveIFF also compresses the data, so the resultant file is often less than a third of the size the uncompressed data would be.

There's also LoadIFF, which quickly loads your image on to a screen that you specify. It is here that Extend shows its transatlantic origins – if you don't have a PAL screen open for a 256 line PAL image, Extend creates a very crushed 256 line NTSC interlaced

Amiga Computing Value

HiSoft Extend Command summary

```
BITPOS      - Returns current x,y coordinates in the current bitmap.
BUSY        - Change the mouse pointer to the word Wait.
CHANGE      - Change a window title.
CHECK       - Poll a series of gadgets.
CHECKSUB    - Check for a submenu selection.
CLEARBUFFER - Clear out a string gadget's contents.
CLOSELIB    - De-allocate all memory allocated for all gadgets.
COMMANDKEY  - Assign a hotkey sequence to a menu item.
CREDITS     - Display Extend credits.
DISKSPACE   - Return the disk space free and useable.
DOS         - Execute any valid AmigaDos command.
EXISTS      - Check to see if a file exists.
FILESIZE    - Returns the size of a file.
FONT        - Set the current window with the desired font.
FREEMEM     - De-allocate all memory allocated with the Memory command.
GADBCOLOUR  - Set the drawing attributes for all gadget borders.
GADGET      - Put a gadget on the Basic window.
GADTCOLOUR  - Set the text attributes for all gadgets.
GETFILES    - Display a file requester and prompt for mouse input.
GETINPUT    - Activate a string gadget for string input.
GETSTRING   - Return contents of a string gadget.
LOADIFF     - Loads and displays a standard IFF screen.
MAT         - Change the highlighting attribute for a menu.
MEMORY      - Get a block of allocated system memory.
MSCREEN     - Move the current screen up or down.
```

screen, which looks awful. Ah well, we can't have everything.

Serious headbangers can use the ViewHAM command to have a look at HAM images. Unfortunately Extend lets you look, but not touch – HAM is too complicated for Basic to keep track of. This isn't strictly true; HAM from Basic has been done, but the routine is huge, very slow and suffers from colour banding problems, so it's not viable.

There are a few other functions for fonts, external commands, file handling, memory allocation, and even a routine to produce a "Wait" mouse pointer. Setting up the library for use is very simple, all the work is done by one command to initialise the current window.

Extend is as forgiving as it can be, given AmigaDos's somewhat capricious nature, but if it says in the manual that a function called incorrectly will cause a crash, you'd better believe it.

Some routines must be slowed down with the PTIME command to allow AmigaBasic to catch up. Thankfully most of these are not speed critical, so the extra second or so won't be noticed.

Souped-up menus

AMIGABASIC, despite being a bit of a dog, does handle menus fairly well. Extend goes much further – it allows subitems on menu items, and hotkey shortcuts, like Right-Amiga-Q for Quit for instance.

On top of this you can define exactly how you want menu items coloured and highlighted. Most powerfully of all, you can set up mutually exclusive items. This is useful, say, if your program has a load option and you want to disable the save option while the data is loading. Now if you need anything more complex, you've outgrown anything AmigaBasic could ever do.



Extend gives you submenus and hotkeys, a major omission from AmigaBasic

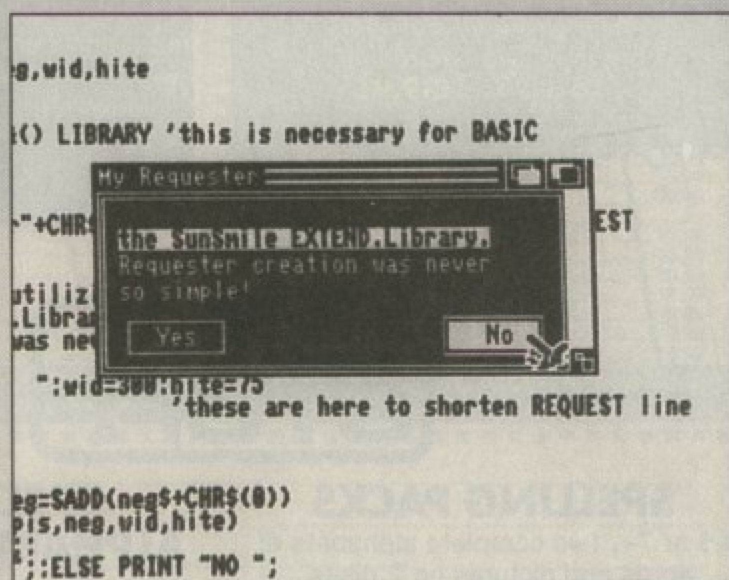
The manual is good, written in that weary but snappy style which gets a bit old after a while. It does the job though, and it's packed with examples, which are also present on the disc – one example for every command.

What, for me, makes Extend so good is that you can use it in your programs and then distribute them without any complications. The downfall of Basic extenders for many of the 8 bit machines was caused by their non-distributable status, but Extend has none of these problems – HiSoft and SunSmile have made Extend.library and Extend.bmap freely distributable.

And because you can use Extend with the HiSoft Basic Compiler, you can now write good code in Basic and hold your head high.

Easy Gadgets

THE real giveaway that a program uses Basic is that there is a complete lack of gadgets, or at least, proper Intuition ones. Here, SunSmile gives as good a reason as any to use the word plethora in describing its options. Both boolean and string gadgets are supported. The former allow program options to be activated, the latter allow for the input of text. You can make them as big, small, dull or garish as you like – just as long as you remember to remove them all before the program is exited.



Point and click – flexible and easy to code

```
OFFGAD      - Disable a gadget.
ONGAD       - Enable a gadget.
PROTECT     - Protect a Basic string.
PTIME       - Pass some time.
PUTSTRING   - Put a string into a string gadget's buffer.
REFRESH     - Attempts to refresh the current output window.
REMOVEGAD   - Remove a gadget from a Basic window.
REQCOLOR    - Alter the text colours of requester text.
REQUEST     - Prompt the user with a requester.
SAVEIFF     - Save the current screen in standard IFF format.
SETHILIGHT  - Sets the highlighting for gadgets.
SETSTYLE    - Set text attributes (italics, bold, etc.)
SETSUB      - Set the position of a submenu.
SETWINDOW   - Passes Extend important info about the Basic window.
SREQCOLOR   - Alter the text colours of the custom string requester.
SREQUEST    - Set the details for requester text and position.
STATUS      - Determine the status of a string gadget.
SUBCOLOR    - Set colour attributes for all submenus.
SUBMENU     - Assign a submenu to a menu item.
TOGGLEOFF   - Switch a select gadget to the Off position.
TOGGLEON    - Switch a select gadget to the On position.
VERSION     - Returns the current Extend version number.
VIEWHAM     - Load and display a HAM screen.
WAITGAD     - Waits until a specified gadget is not active.
XSCROLL     - Scroll whole or part of a bitmap.
```

Spit and polish

PROGRAMS often have to ask the user Yes or No questions, such as whether it's OK to format the hard drive or not. This is where requesters come in.

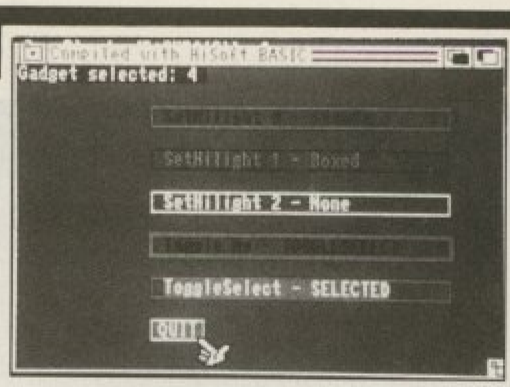
With Extend it's just as easy to produce a pretty little system requester as it is to use an unpretty "INPUT Y/N" statement. They both do the same job, but the requester looks far better and is resistant to turnipheads trying to input garbage.

If the program processes any amount of data you'll want to ask the user for a filename in the nicest possible way. Unfortunately, the Extend file requester is really quite an appalling kludge. Instead of using the standard ARP file requester, which most of us (including HiSoft) know and love, SunSmile has gone for its own rather feeble offering.

It doesn't even have a scroll bar or a device selection list, so if you're looking for a file from a hard drive you have to edit the string gadget and then click on the down arrow repeatedly to find the file you want.

It refuses to be put on a lo-res screen (the ARP one can be coaxed to do this) even though it is narrow enough to do so. It also doesn't update the directory list at every access – this can sometimes be good, if you've got a very full disc, or can sometimes be a pain, if you want to access a file you've just written.

SunSmile could do itself a great service by replacing the Extend file requester with something better. It's better than nothing, but it's not good enough.



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Musica ex machina

So you wanna be a rock star? John Kennedy investigates the package that is leading the Amiga Midi revolution

MUSIC on the Amiga comes of age with Music-X from MicroIllusions. Instead of an average-to-good sequencing package, we are treated to a superlative sequencer, *plus* a whole host of utilities which integrate perfectly to provide a complete music editing workstation.

Music-X makes full use of the Amiga's multi-tasking environment to provide four packages in one – a Sequencer, a Midi Filter, a Sampler Playback and Editing system plus a Patch Editor and Librarian.

The Sequencer mimics a cassette recorder, using conventional Play, Fast-Forward, Rewind and Record controls. Assuming you have a Midi interface and keyboard connected, to begin recording you just hit Record and start playing – a metronome signal can be routed through the Amiga's sound channels to keep you in time. There's no need to fret if you don't have any music hardware – you can use the internal Amiga sound channels.

Once you have finished laying down your first track you can slip into the editor page to correct any errors that may have crept in. Here you have a choice – the Bar Editor or the Event Editor.

The former is a graphical masterpiece that displays all the Midi information, not just notes, in a colour-coded grid form. A musical keyboard up the left hand side of the screen shows which note is which and the horizontal axis is labelled in time units.

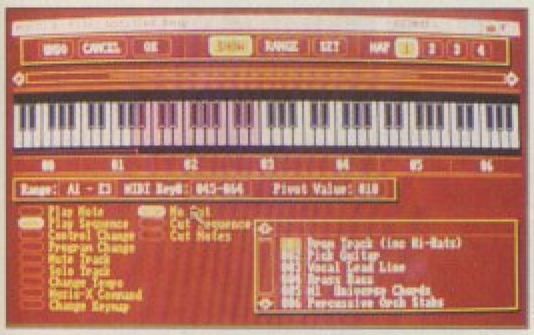
The whole screen scrolls from right to left displaying the next section under scrutiny. Altering a note is a move-the-mouse-and-click affair, cutting and pasting large sections is just as simple. From this editor, transposing notes and altering individual Midi channels can be easily done.

The quantise module is also accessible from here, although it operates in a slightly different way



from that on other sequencers. A quantiser will tidy up any slight variations in timing and duration that you may have inadvertently introduced while entering your tune.

The Music-X quantiser operates on notes that have already been stored in memory, instead of the more usual quantise-while-you-play system used on other packages. The Music-X



Splitting the keyboard – play the drums at one end, and the cello at the other.

system is better because it allows little variations to be introduced to stop the music sounding totally on time, hence losing all vestiges of sounding human.

The Event Editor differs from the Bar Editor in that it displays the recorded sequence in memory as a long list of Midi information, or events. As a result it looks very complicated, but is perfect for correcting mistooks with absolute accuracy.

As well as being able to map any output channel on to any other from the Sequencer screen, Music-X allows complete redefinition of incoming Midi signals.

Producing keyboard splits whereby different parts of the keyboard can send information on different Midi channels is only the start. All Midi events can be split between channels, allowing almost total control of a music system from a single keyboard.

This provides even the simplest Midi keyboard with capabilities usually only found on considerably more expensive models.

A total of 16 IFF or Sonix samples can be loaded and re-tuned from the sample Playback screen. Their volume envelopes can also be edited using a cute graphical system. The sound channels of the Amiga will provide up to four different sounds at once, although the sample to be played can be changed between the 16 in memory at any time.

The use of internal samples means that it is possible for the user with no external hardware to compose and play tunes, although the range of

➤

Yesterday

MIDI, or Musical Instrument Digital Interface, is one of the greatest success stories of modern electronics. Back in the old days, some manufacturers realised that a standard protocol for inter-connecting musical instruments was needed to replace the rather haphazard "CV and Gate" analogue system they were using.

After lots of meetings and expensive lunches, the Midi standard was finally decided upon. Soon all the new keyboards and electronic drum kits started having funny little 5-pin DIN sockets on the back.

The Midi interface was a true digital system – a fast serial interface like the RS232 we all know and love. And it was going to change modern music dramatically.

Midi could send details of notes to be played, their volumes, which voices to use and, in fact, anything that could be represented digitally. Since all the new synthesisers were digital by design, this meant nearly everything that could be played by hand could be represented by a string of serial data.



Irish rock band Meanwhile In Czechoslovakia. They used an ST until Music-X came along

The similarity between Midi and a normal computer serial interface was soon exploited by computer enthusiasts in a way in which the early Midi designers had not even dreamed of.

Now that computers can generate and control Midi signals the pop charts will never be the same again.

Hello, goodbye

THERE are three types of Midi socket – the IN, the OUT and the THRU. The IN receives incoming Midi signals, the OUT sends them out and the THRU echoes any incoming signals received at the IN socket.

Thus a keyboard needs at least an OUT socket and a sound module needs an IN socket. In practice most equipment has at least one of each to allow information to be passed both ways.

If you have a large number of keyboards, modules and drum machines you can arrange them daisychain fashion, where the IN of one unit is connected to the OUT of the other, and so on until the ring is complete. This tends to be frowned upon because each link in the chain delays the signals a little.

Alternatively you could drive each unit with a direct IN/OUT signal and use the THRU to carry the signal to units such as Drum machines which don't need to send any information back.

We can work it out

MIDI works by assigning each instrument a channel number between 0 and 15 – or sometimes 1 and 16 – rather like an address in computer memory terms. When the instrument recognises its ciannel request it pays special attention and gets ready to play a note or do whatever the Midi signal asks.

Sometimes a synthesiser can respond to more than one channel at once, allowing it to play several tracks totally independently using different voices.

➤

sampled sounds supplied is, to say the least, small. Of course, the wonderful IFF standard means that lots of PD sounds are out there just waiting for you to use them.

All programmable synthesisers can hold several voices internally. This is fine until the batteries run out on the keyboard or you run out of room to store your latest sound-patch.

The Librarian page allows you to download all the voice data, save it on disc and re-load it at a later date. This is nothing new, but being able to do it from within a sequencer package is a large step forward.

From this part of Music-X is also possible to edit the sounds by means of a Patch Editor. As each synthesiser creates and stores its sounds differently, supplying an editor for each keyboard is impossible.

Editors for specific machines will be available in the future at ridiculously low prices, but in the meantime a horrible hex dump is available for you to experiment with.

Midi timing can be internal, external or taken from the television and cinema industry standard SMPTE signal by means of some optional hardware. The internal clock is the system most users will use. With a resolution of 1/192, or a quarter note, it's unlikely that a more accurate clock will be needed.

Documentation takes the form of a well written 480-page epic which takes you by the hand through all the facilities and yet works well as a reference guide.

A utilities disc is provided to help install Music- X on your hard drive, should you be lucky enough to own one. Also on this disc are programs to convert Music-X files to a standard Midi file format and to convert Smus files to Music-X format. All that is missing is a stand-alone program to play Midi files.

Add-on modules are promised which will extend yet further Music-X's many capabilities. One of the first available should a proper music printing module to provide a top rate hardcopy of your carefully edited music. What about a module to add an automatic Stock-Aitken- Waterman facility? Should only take about 5k...

With so many facilities available from within the one program, Midi musicians have never had it so good. The use of the Amiga sound channels means that even if you don't have any Midi hardware you will still be able to produce music of superb quality.

Music-X is the ultimate sound package. If you are in the least bit interested in music on the Amiga, you must buy it.

With a little help from my friends

ONCE you get bored with the samples supplied with Music-X, or want to expand on the number of sounds you can play at once, you will need to acquire some extra musical hardware.

First you will need a Midi interface – Music-X does not come with one. Interfaces are available from many sources for around £30.

All these interfaces are practically identical, they only provide a connection between the Midi signals and the Amiga's serial port by means of an Opto-isolator. Get the cheapest one you can, or if you are feeling adventurous, build your own.

If you buy, make sure the one you choose has at least one Midi IN, one Midi THRU and as many Midi OUTs as possible.

Mine is a DIY job that cost less than a tenner to build and sports an IN, a THRU and three OUTs.



The Casio CZ1000, the Amiga and Music-X – all you need to annoy the neighbours

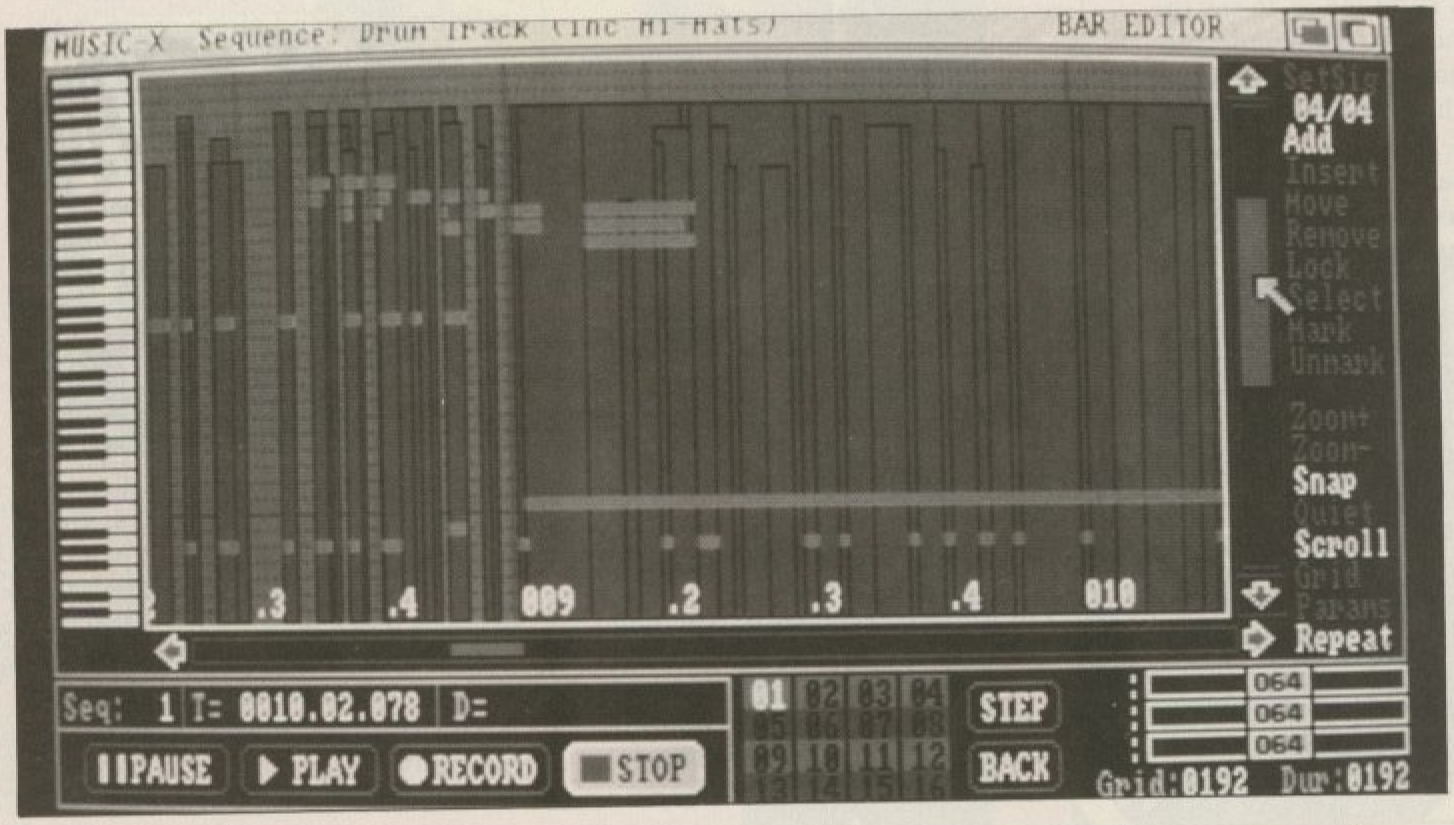
There is now a whole range of Midi instruments available starting from about £100. The now classic Casio CZ101 can be picked up for between £100-£200 secondhand. It has four or eight channels of sound, which you can edit freely to produce all sorts of weird effects. The CZ1000 is identical except it has a full-size keyboard instead of the little fiddly one on the 101.

There are also lots of small keyboards available in the £100-£300 range that offer a collection of pre-set sounds and a built- in drum kit.

Some of these keyboards sound very nice and may provide a good starting point for your introduction to Midi. Have a play with them next time you are in Boots and see what you think. Never worry if you can't play a tune – with Music-X you will be able to edit the notes with the mouse until you get it right.

For those more used to wind instruments, you can get a Midi saxaphone from Casio. Casio even produces a Midi guitar, so the old excuse that goes "But I can't play a keyboard" doesn't wash any more.

➤



Laying down a drum track with the Music-X sequencer

Come together

WHEN the Midi standard took off, sequencers to exploit it were soon available. A sequencer stores notes and drum patterns, not as sound but as the Midi signals needed to trigger them. Once the Midi signals are stored in memory they can be manipulated in all sorts of ways.

Early sequencers were small boxes that consisted of little more than record and playback buttons. With the introduction of computers it is now possible to store, display and edit the individual Midi signals using the sort of Cut and Paste techniques used in word processing or graphics packages.

Getting better

AFTER using a small keyboard you may get bitten by the bug and want to upgrade to a slightly more sophisticated system. Since with a Midi system you really only need one keyboard – the "mother" keyboard – why waste money on buying another synthesiser?

Using this line of thinking, manufacturers have started to release modules which contain nothing more than some sound electronics, some Midi IN/OUT signals and a multi-channel audio signal to connect to your tape recorder or amplifier.

One of the cheapest is the new Cheetah system called the MS800. It retails at around £200. The one I heard at the PC Show last October certainly gave a sound that I would like to experiment with.

Cheetah also produces various other modules and drum machines, as well as a complete range of mother

Let it be

THE ST used to be *the* computer to interface with Midi equipment, thanks to its Midi IN and OUT sockets. This was rather a good marketing ploy by Atari, but the tables are turning.

Anyone using Midi at all seriously will need a Midi THRU and more than one Midi OUT, making an external interface on an ST just as necessary as on the Amiga.

The Amiga starts to score heavily with its built-in sound capability. It has a sampler system as an integral part of its design – no uprated Spectrum chips here. This means you have an extra four channels of sound straight away.

Where the Amiga wins hands down is with its multi-tasking operating system. Flipping from one utility to another is child's play and totally impossible on a lesser machine.

With Music-X and a Midi interface, the Amiga can now be the heart of the

REPORT CARD

Music-X
MicroIllusions 0480 496497
RRP £199+vat, but shop around, we've seen it on offer at £20 less than that, inc. vat.

EASE OF USE...
Using idi sequencers will never be simple, but Music-x is the best yet.

SPEED...............
More sinc'ing options than a submarine. Nothing takes any time to do.

VALUE...............
Nothing comes close at this price point on any machine.

OVERALL **97%**

In a class of its own. All things come to he who waits. Music-X was worth waiting for.



Max the Hax presents the collected wisdom of the greatest games players on earth – all of them Amiga Computing readers

The will to win

APB



NEIL MANSELL says: To avoid demerits keep your finger on the siren, this has the added advantage of getting other cars out of the way. Go straight to the station if you catch the criminal. You don't have to worry about your quota.

Never miss the opportunity to enter either the car or donut shop. Don't, however, get gas unless you need it because it slows you down. Hitting a sign or building results in a demerit.

Opponent	Sirens
Litterbugs	1
Helps	1
Hitchers	1
Honkers	2
Doper	3
Drunks	3

Table showing how many times you have to hit a car with your siren on

Name	Reward	Offence	Resistance
Freddy Freak	$1,000	Selling drugs	2
Candy Goodbody	$2,000	Hooking	3
Bernie Gasman	$3,000	Arson	4

Resistance of each target

Action Fighter

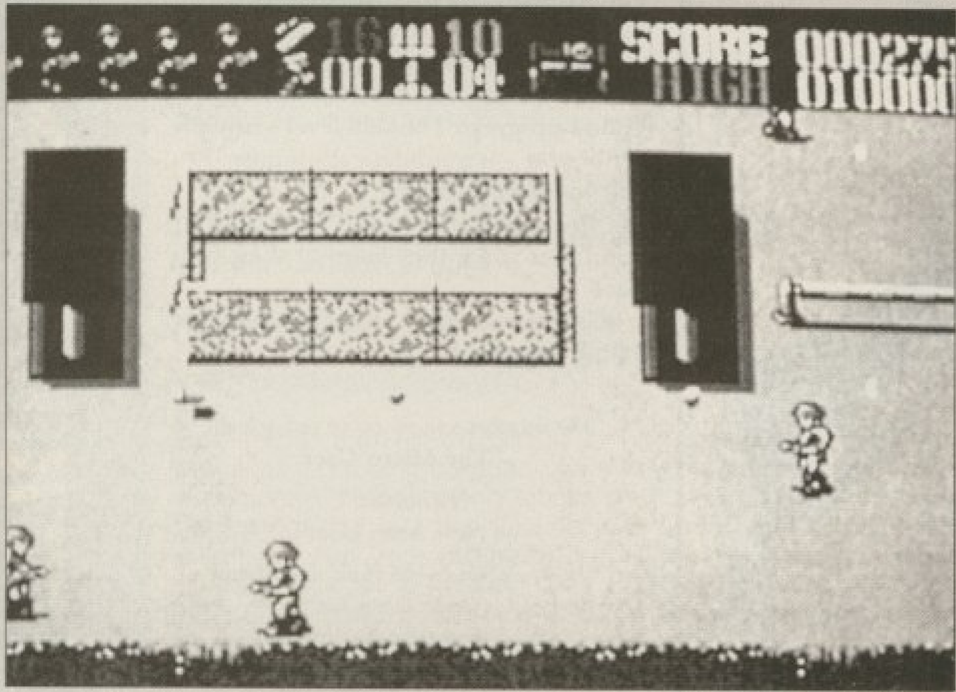
RICHARD HADDEN says: If you get a high score type ZBACKDOOR with no spaces instead of your name into the high score table. You will start the next game with infinite lives and energy.



Fernandez must die

RICHARD HEATH says: This, like Impact, was written by an errant Monty Python Fan. There is a lot of it about. Pause the game and type SPINYNORMAN.

This will give you infinite lives, but get comfortable first because it will still take you about three quarters of an hour to finish the game.



Vigilante

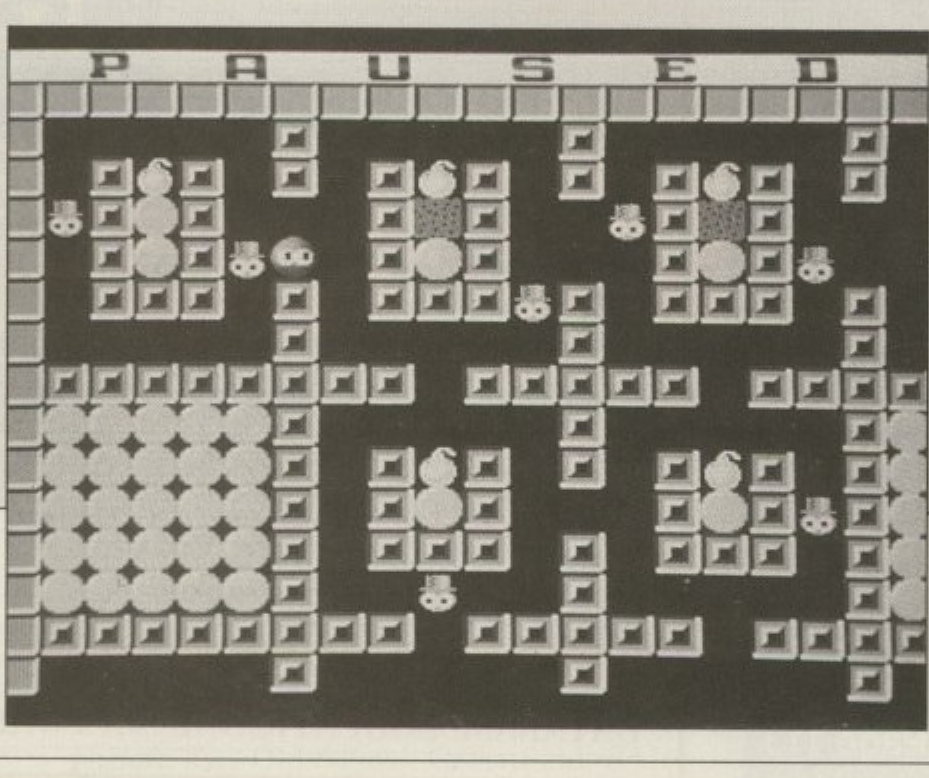
RICHARD HEATH says: It's simple, just get on to the high score table and type Green Crystal. Press F1 a few times to keep your lives topped up.

If you can't be bothered to go through the long, slow-moving levels press F8 to skip them one by one.

Cave Runner

MATT BURT says: Here's one for Cave Runner which was on the *Amiga Computing* Cover disc last November. Get to level two, which is easy enough, then type SUB B BOYS including the spaces. The screen will flash blue then F1 gives nine lives, F2 sets the timer to 99 - useful for level D and F3 exits the current level and starts the next.





Write to Max

GAME KILLER is always on the lookout for hot tips, so if you have found a cheat mode, bug or written a poke then drop it in the post – on disc if it is a long listing. If your work is used I'll send you a game draw at random from the goodie box and a Konix joystick.

To speed up getting the prize to you please cut out, photocopy or copy this form. It will be used as the address label to send out your parcel so please write neatly. May all your bugs be simple ones.

I have supplied tips/pokes/cheats for
....
....
....
....
....
....

Name..
Address..
....
....
....

I confirm that the information I have supplied is mine, it hasn't been published elsewhere and I haven't sent it to anyone else.

Send this form to Max "The Hacks" Tennant, Game Killer, Amiga Computing, Second Floor, North House, 78-84 Ongar Road, Brentwood, Essex, CM15 9BG.

Signature..
Date..

CON

Argasm V

Joloyon Ralph, hacker extraordinaire, adjudicates in a battle between a young upstart and an established friend

UNTIL recently there has only been one assembler worth using on the Amiga – HiSoft Devpac. There have been other assemblers.

The Metacomco one is now out of date and terribly slow and difficult to use and Kuma's K-Seka, favourite of the European demo writers, is more of a monitor with a little assembler thrown in. Now there is a new challenger: ArgAsm from Argonaut Software.

I've never thought that assemblers are slow. Indeed the reason I started programming in assembler in the first place was because after a couple of weeks of coding in C I got bored of waiting for compilers and linkers and all the other disc-spinning, time-wasting progletts to finish, only to tell me I'd left off a squiggly bracket from the end of line six.

What I needed was a language where I could make changes to my program and see the results almost instantly. I was, of course, used to Basic, where all one has to do is type

Polished performer

DEVPAC V2.14 consists of a blue and white plastic ring- binder containing a 154 page manual, the two unprotected program discs and a pocket 68000 reference guide.

Initially I thought this 68000 guide was a cheap gimmick, but looking through it I found that it contains all the useful pages from the Motorola 68000 programmers reference manual, a book I needn't have bought now. It won't teach you machine code, but it's an invaluable guide for any programmer.

The Devpac manual is comprehensive, covering setting up your system to run the assembler, an introduction to the editor, assembler and debugger, plus a good set of appendices covering everything from AmigaDos error codes to a bibliography. It is well presented and easy to follow.

The first program disc is a slightly cut-down workbench, containing the assembler, debugger and editor, all in the C directory, along with the include files and some example programs.

The examples are fairly simple and unimaginitive, but are a good introduction to using the Devpac assembler and editor.

The second disc contains various alternative include files and the Arp includes (Amigados Replacement Project), allowing you to use Arp requesters in your programs. Most of the time you will only need the first disc, leaving your external drive free for your source disc.

REPORT CARD

Devpac
HiSoft 0525 718181
£59.95

***EASE OF USE*....**
Assemble to Memory and Jump to Error options help a lot, and Monam2 is without doubt the best machine code monitor/debugger on the Amiga.

***SPEED*................**
Fast enough for most. Experienced coders may have to twiddle their thumbs or juggle for a few moments.

***VALUE*................**
The excellent manual, 68000 pocket book and powerful monitor/debugger make this the best value Amiga assembler on the market.

***OVERALL* 84%**

There is always room for improvement. A faster upgrade is promised. But probably won't reach Argasm's speed.

Devpac

in the program and run the thing. Devpac did the business. I typed in my code, assembled it, and it was there, ready to run, in about 30 seconds.

HiSoft has since released an upgrade, Devpac 2. This is faster and has more options than the version I first used. It can now assemble directly to memory instead of only to a disc file, which means you can assemble code and test it without having to leave the editor.

Jez San of Argonaut Software was one of Devpac's greatest fans. He used it to write, among other things, the ST and Amiga versions of Stargliders 1 and 2. But Devpac was not fast enough for Jez, so he wrote his own assembler called ArgAsm 68000. It claims to be the fastest Amiga assembler, being able to assemble your code before you've even finished typing it. Well, almost.

Since ArgAsm is designed to out-perform Devpac it is not surprising that it is compatible with the Hisoft assembler, even down to understanding Devpac's ST directives. What is surprising is that it is also compatible with Metacomco and Cape assemblers.

Total compatibility with three things which are not compatible with each other is, of course, impossible. Common sense is the usual solution to this problem. And this means Argasm does not suffer some of Devpac and ➤

Fast and furious

ARGASM 68000 comes in a yellow and black plastic ring- binder. The manual is shorter than the Devpac one at 69 pages – not always a bad thing, but this time it is. It doesn't go into nearly as much detail as the Devpac manual and gives me the impression that it was written in a hurry.

Not only is it short, but it seems to miss out several features of the assembler all together – the Assemble to Binary File function, for example. Hopefully a future release of the software will contain a completely new one.

The program comes on two unprotected discs. The first contains the assembler, Arg, and the editor, ArgEd. You do not get a debugger with ArgAsm. The manual recommends the best debugger to use is Monam2, the one supplied with HiSoft's Devpac 2. As this is not available separately from Devpac, you would have to buy both assembler packages to use ArgAsm with its recommended monitor.

The first ArgAsm disc boots up into an Amiga shell, better than Devpac which drops you out into a CLI.

The second disc contains the include files and some example source files, which are a little more interesting than the HiSoft offerings.

Putting the include files on the second disc is a pain if you only have two drives, because you will presumably have to have the assembler in df0: and the disc with the includes in df1:, leaving no drive free to store your source files.

REPORT CARD

ArgAsm 68000
Argonaut 01-906 3744
£59.95

EASE OF USE ....
Newcomers to assembler may have trouble because of lack of a good monitor/debugger.

SPEED................
Can't be beaten for speed. Assembling is exceptionally quick. This is the reason the program was written.

VALUE ....
No monitor/debugger means you'll have to shell out again, even if it's only for a shareware one. HiSoft will sell you Monam for £39.95.

OVERALL 87%

ArgAsm has been designed to beat Devpac. With the time and effort Argonaut has put in it would have been surprising if it had failed.

Cape's nasty idiosyncrasies.

There is no ST version of Argasm, although one programmer has offered to do the conversion for free just to get the speed. This is a real bonus. It means the program has been designed without being fettered by conversion considerations, and with the Amiga in mind.

The Argonaut program has better support of the AmigaDos link file formats in that it allows expressions containing external references within brackets. Copper instructions are built in – again the kind of feature you wouldn't expect unless the program was produced by Amigaphiles.

Commercial realities mean that programmers do have to cater for the ST, and Argasm has an option to produce raw binary files suitable for porting down.

On loading the two programs the first thing I noticed is that they look almost identical. They also share most of the same function and control keys, which makes converting to ArgAsm a lot easier for Devpac users like myself.

ArgAsm's editor, ArgEd, is definitely the smarter of the two. You can split the window into two separate ones, horizontally or vertically, and subdivide each of these windows into two more. I spent quite a while dividing windows up into even smaller windows before I remembered that I was meant to be reviewing the package.

Having one window displaying the end of your source and another displaying the beginning is useful. It saves having to jump around your source code all the time. This is made especially useful by the ability to cut and paste between windows.

ArgAsm's editor is faster than the Devpac one because it uses the blitter for text handling. However, a similar speed can be approached with Devpac editor by running FastFonts (FF), which comes with Workbench 1.3, or BlitzFonts, which was on the January cover disc.

	ASSEMBLE TO	DEVPAC v2.14	ARGASM v1.0
MOVES.S	Nothing	12 secs	3.2 secs
MOVES.S	Memory	12 secs	
MOVES.S	DFO:	19 secs	12 secs
MOVES.S	RAM:	11.5 secs	needed > 1 meg
ZOWEE.S	Nothing	6.5 secs	4 secs
ZOWEE.S	Memory	9 secs	
ZOWEE.S	DFO:	19.5 secs	15 secs
ZOWEE.S	RAM:	14 secs	needed > 1 meg

Two files were tested. MOVES.S consisted of 6,000 lines of the instruction MOVE.L #12345,d0. However, these sort of test files do not always give realistic results, so the source code for the Amiga Computing Zowee Demo was also tested. This source includes INCBIN files read from the hard drive in both cases.

Jez doesn't like waiting, so Arg's search and replace is significantly faster, there is an expression evaluator to save digging under papers for a programmer's calculator and the save function can remember all the windows and settings so that getting going when you start up is as quick and automatic as possible.

On Devpac the sleepy bubbles pointer has been replaced by a little hourglass. Argonaut definitely has tongue in corporate cheek with its animated equivalent.

The main selling point of ArgAsm is its speed. It claims to be five to 15 times faster than Devpac 2. As I never take anybody's word for anything, I did my own tests on the two assemblers.

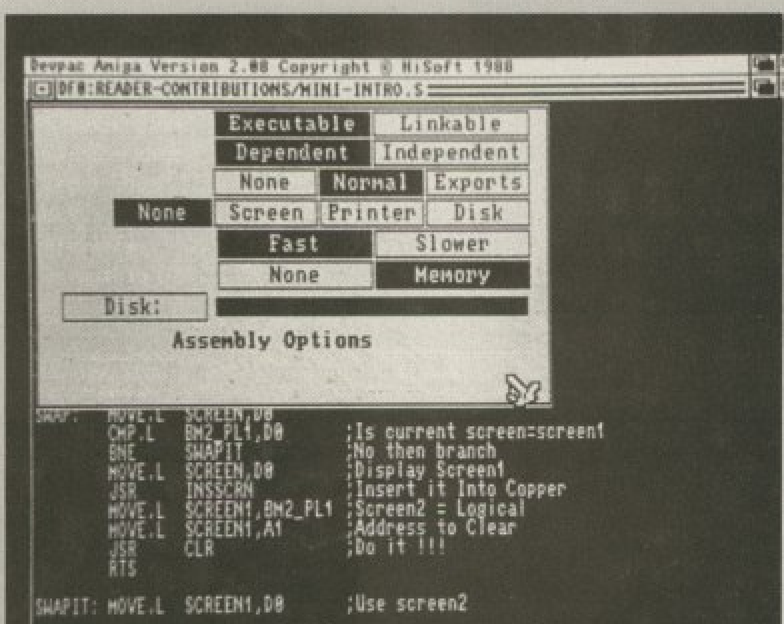
The first thing to note about these tests is that ArgAsm has no Assemble to Memory option. In Devpac 2 you can assemble a file to memory and test it, still within the assembler. The nearest you get to this in ArgAsm is assembling to a ram file.

If you only have a 1 meg machine you will soon find that you haven't got enough memory to assemble. If you do have enough memory to save it to ram, you then have to switch to a shell window and run the program from there to test it.

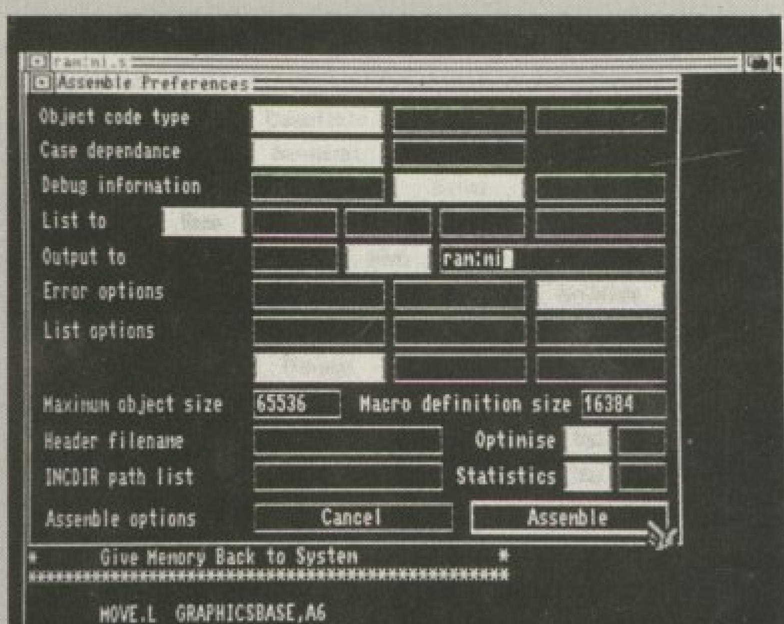
Both of the test files I used could not assemble to a ram file on a 1 meg Amiga. Both assembled to memory easily in Devpac 2.

Because there is no Assemble to Memory option in ArgAsm, and there is not enough ram in a 1 meg Amiga to assemble anything much over 300k as source and object to a ram file, the only way to test your programs in ArgAsm on a two drive, 1 meg Amiga is to assemble to floppy. This can take longer with ArgAsm than assembling to memory on Devpac 2.

ArgAsm is fast, although I don't think Argonaut is being entirely reasonable about the performance



Devpac's assembly options include Assemble to Memory



ArgAsm's Optimise function will try to speed up the execution of your code

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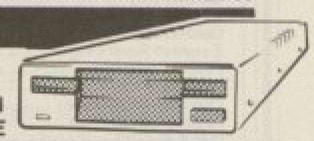


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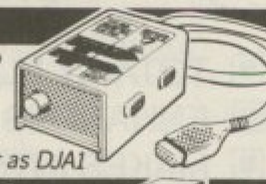
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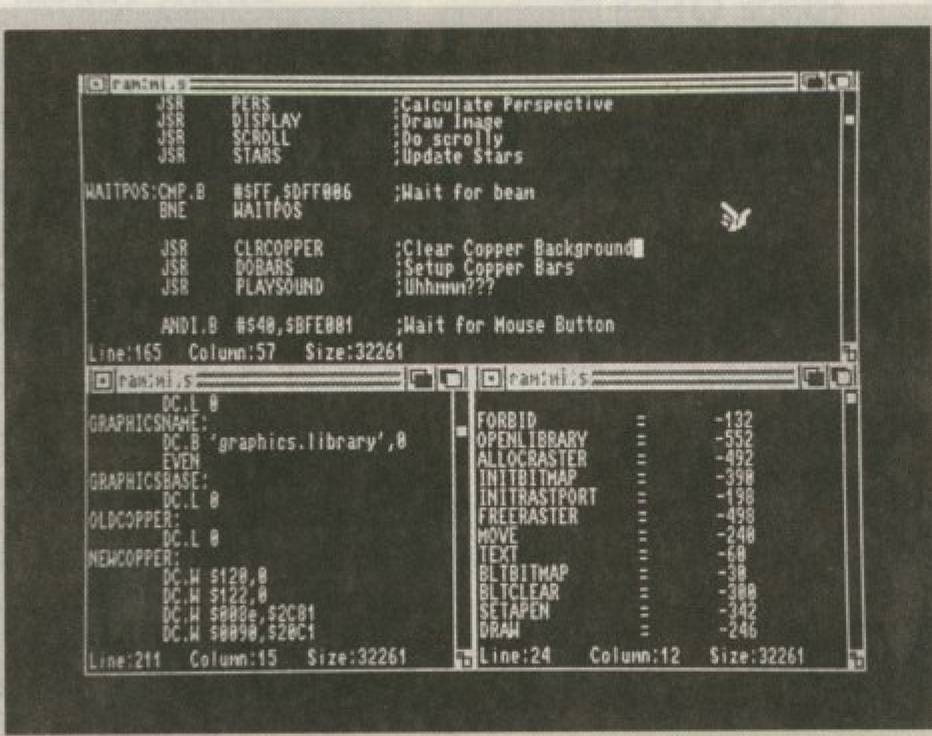
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The windows in ArgAsm's editor can be split as many times as you like

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increase over Devpac 2. Any assembler is limited by the speed of the Amiga's drives when assembling to or from floppy. And as ArgAsm relies on assembling this way, you lose the advantage of speed.

Where ArgAsm comes into its own is on very large files. For these you are talking at least 1.5 megabytes of ram and a fast hard drive. Games programmers will find ArgAsm invaluable because assembling to memory is not something they use.

ArgAsm would seem to work best for assembling to floppy – and that is what it was written for, a fast assembler to use for the development of future Argonaut games like Hawk, the new flight simulation soon to be published by Electronic Arts.

No only is Argasm fast, it is aimed at programmers who want to write programs which run fast. To this end Argasm will display instruction cycle timings and flag settings to help optimise your code.

A valuable Devpac option missing from ArgAsm is Jump to Error. If you assemble a file and there are, say, three errors in it, by selecting Jump to Error you can go to each line in turn which contains an error and alter it or add more code. This will be implemented in future versions, if only because the programmers at Argonaut want it. ArgAsm has an option on the assemble screen to edit lines with errors while assembling. It is supposed to stop assembling when an error is found, allow you to correct it, and then continue assembling. This option did not seem to do anything on my review copy and I could find no mention of it in the manual. I assume it is a feature to be added at a later date.

One of the irritating things about Devpac is that it refuses to load a source file larger than the buffer size set previously. ArgAsm has fixed this. Any size source file can be loaded into ArgEd – it automatically sets the buffer size.

However, on Devpac 2 the buffer allocated to the assembled code is set automatically, but on ArgAsm you have to set the buffer manually. And if you haven't set a buffer large enough, ArgAsm is limited in what it can expand, and sometimes refuses to assemble.

No one writes perfect code first time, especially when just starting off. To aid this problem Devpac comes with a monitor, Monam2. This can either be used inside the assembler environment or as a stand-alone monitor/debugger.

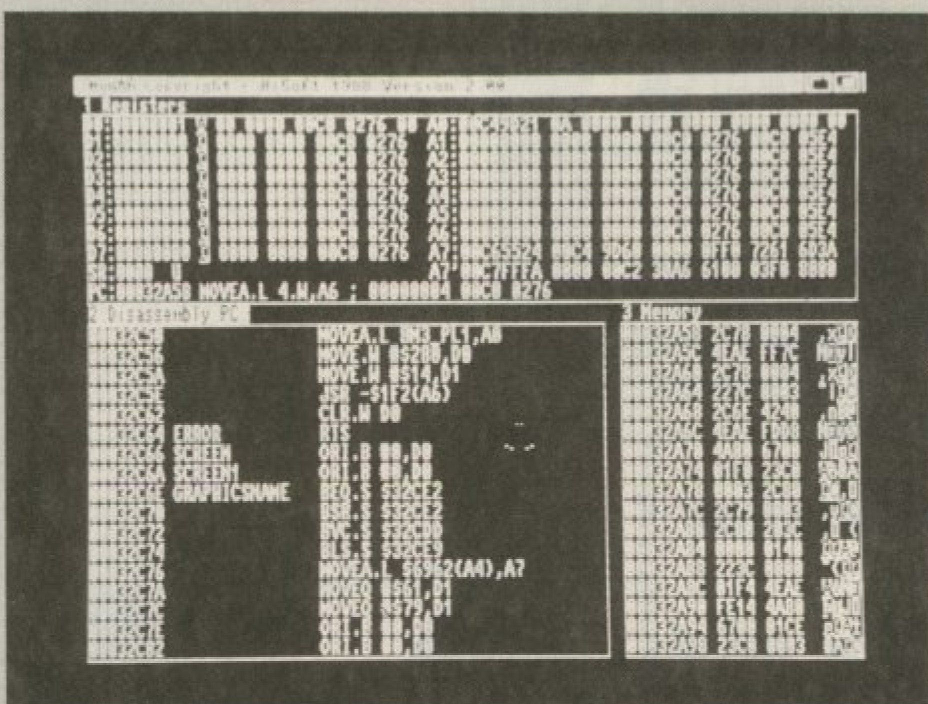
The debugger has a status screen at the top giving information about the current state of the registers, and it allows you to browse through memory disassembling, single stepping or just hunting around for Ascii text. You can even load source code to into a separate window to allow you to examine the source while you debug the assembled code.

Once you get used to Monam2 – and it is very different from every other monitor I have used on the Amiga – you will find it invaluable in helping debug your code. Even Argasm's superior error messages can't compete.

HiSoft has promised a faster Devpac, Argonaut will undoubtedly release an ArgAsm with more features. Perhaps by then the gap will have closed.

So which assembler should you buy? Well, if you are learning to program in machine code and have had little experience with assemblers, you should definitely go for Devpac 2. The documentation is excellent and you will get everything you need in the one package.

If you are already an Amiga machine code programmer and find your current assembler too slow, you should look at ArgAsm. It certainly is the fastest assembler available for the Amiga.

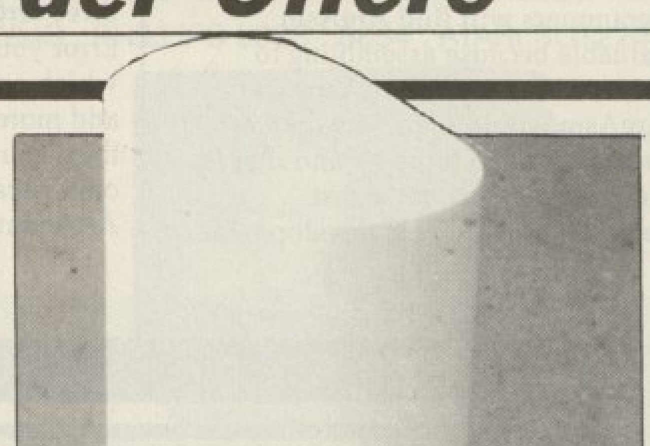


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Surf's up. An' dis Surf is Ezra Surf. It's my job to sort your scribblin's and come up with an answer to any grief the Amiga gives ya. So if you've got something to say, say it to me. I'm a first name kinda guy, so please don't hide behind initials. It's too suit. Best letters will be sent prizes of up to –100 so get a copy of Protext into your drive pronto. Drop me a line at Ezra Surf's Postbox (ESP), Amiga Computing, Second Floor, North House, 78-84 Ongar Road, Brentwood, Essex, CM15 9BG.

Ezra



Translation trouble

WHAT a fab magazine you have. I am studying HND computing and need to know if there is a version of Pascal for the Amiga which will enable me to run any Turbo Pascal programs (PC1512) if I connect a 5.25in drive.

Tom Davidson,
London SW17.

No worries. First to read the IBM format discs you need a 5.25in drive. £99.95 from Club 68000 (01-977 9596). You'll need some software to read the daft 360k format. Club 68000 can furnish you with this for £39.95.

Lastly you'll need a Turbo Pascal type compiler. Getting hold of the Metacomco one can be tough 'cos they don't answer the phones. HiSoft is working on a suitable program, expect it sometime around March. Call HiSoft on 0525 718181.

Telly addict

COULD you give me info on a high quality 16in TV with a Scart connector? It needs to support all Amiga modes, like a monitor to show 4,096 colours and 80 columns. Less importantly stereo sound (not nicam), remote control and Teletext.

I need a TV/monitor in one due to lack of space. Is it possible to connect a modulator to a B2000, and finally what is the official Commodore retail price for a base B2000?

Dave Thomson,
Broughty Ferry, Dundee.

It's impossible to keep track of the latest models of televisions. These days they nearly all have Scart inputs. Separate sound channels are rarer, and you are probably better off running a couple of leads to your hi-fi or using a sound booster like the one in last month's project.

Yes, you can use a modulator with a 2000, although the quality will suffer. The official price is £1489.25, digging through the ads in this mag you should find one for under £800. Because of some of the cheap monitor bundles you might be better off getting an A2000, Commodore or Philips monitor and the Microtext adaptor. This costs £143.75 and lets you use the monitor as a TV as well as giving you teletext.

Fixing a hole

HELP! please, please help me. Let me explain my problem. Before getting an Amiga I was a dedicated PC user. My friend bought an Amiga. Two months later I had one.

I play keyboards and already know that Midi exists. I looked into upgrading my PC for use with my keyboard. This turned out too expensive.

Then along came the Amiga A500, a Casio CZ250S Midi-compatible keyboard and a Midi interface with all the necessary leads.

The problem is software. So many different packages, different prices. What do I buy? I need a program with which to input keyboard parts, preferably without having to enter in the information note by note.

Oh yes, and it needs to speak English, not Mandarin Chinese. Obviously the lower the price the better. The reason I am writing to *Amiga Computing* is because of the article Smash and Grab in October's magazine. At least your magazine doesn't just review games.

Tim Thompson,
Wibsey, Bradford.

Thought you were going to break out into song there. Music-X cannot be beaten. One day there will be a cheaper version but you can go grey waiting for the next version, of everything. Take the plunge. Shop around for the best price. Datel does a nifty Midi interface for £34.95. Give them a call on 0782 744707.

Empty article

I AM WRITING to complain about the Build a better Basic article written by John Kennedy in the October issue of *Amiga Computing*. The whole of the first page was devoted to a juvenile piece of rubbish of no relevance whatsoever to programming.

If *Amiga Computing* cannot fill its pages with "carefully researched and finely crafted instructional prose" then I suggest that they be left blank.

A Stevenson,
Middlesborough, Cleveland.

Can't please everyone. One man's juvenile piece of rubbish is another's party manifesto. Because I know it will make you happy I am sending you some blank pieces of paper.

Raised hackles

YOUR C-light review in the October issue is the worst review I've read. The writer seems like he has just finished two years of using his Amiga solely as a word processor. He talks of C-Light as if it was the only ray tracing package available for the Amiga.

A reasonable review would give a comparison with other 3D paint packages, and not with supercomputers.

It's totally untrue that this is the most that can be achieved with the hardware, as the reviewer thinks. Turbo Silver, for example, is not only faster but allows you to determine how much light will be reflected and its colour, and how much light will pass through an object, its colour and the bending of light when it passes through, and more.

Scuplt 3D is a bit faster already, but the new XL version would

➤

make it several times faster. C-Light's originality is in its user interface. Apart from that, a list of options available with the program would have been helpful. Does the 640*256 resolution allows for ray tracing using dithering?

So please let someone who knows his business review software packages. No more wrong statements, like "as fast as you can get considering the hardware". These kind of packages always beg for comparative reviews.

Eyal Teler,
Jerusalem, Israel

The magazine has several ray tracing experts, yet the editor made the very wise, I think (crawl, crawl, can I have a pay rise) decision to give C-Light to someone who both understood the techie side of ray tracing and hadn't been spoiled by playing with more expensive programs.

C-Light doesn't look too hot if you have used Sculpt-Animate 4D, but then Sculpt is eight times the price. It is aimed at someone who just wants to tinker and for that reason it was reviewed by the right person.

Starting trouble

THE Amiga was a giant leap into the unknown for me. Unfortunately I haven't come on very far. I can load all my discs, play games, I have read the manual but it gets really confusing. I've done a dir of just about every disc I own, why I couldn't say, it just looks good on the screen!

What I need is a book or disc tutorial that takes it a step at a time for someone who can only turn on the machine and load a disc. I want to be able to program and do graphics and everything, but don't know where to start.

I followed one of your features to teach you how to use say translates and I thought it was great when my Amiga spoke to me.

The other thing is when the manual talks about the Say speech synthesiser it says you have a choice of voices, but even when I change the pitch it sounds exactly the same.

This could be me, so what are the correct pitch and speed for speech variations? Thanks for your help.

Pennie Jones ,
RAF Bruggen BFPO.

The Amiga for Beginners, from Abacus for £12.95 is a good place to start. The Computer Store has it in stock. Call on 021-770 0468.

Bargain binder

AFTER reading issue 6 volume 2 I could not help to notice that you quoted to your Finnish friend £4.95 for the binders. Yet on the order form in the same issue it is priced at £5.95. Is it cheaper in Europe than it is in the United Kingdom?

M J Taylor,
Pontefract, W Yorks.

Yes, that was a special price for Kalle Saariaho because ***he*** *doesn't pick holes when I make a silly mistake. Besides, that was before I started. It was the editor's fault.*

Animatics antics

HELLO, I'm new to computing. I want to be able to assemble a storyboard and 3D animatics in memory and then download into a domestic VCR for a showreel.

Here are my problems so far: Memory and compatibility. The Commodore A590 looks tempting with expandability to 2 meg. However, would this memory clash with future expansion in the slot under the Amiga?

Would I have any syncing errors if I spread a sequence between them before editing downloading? Since I've heard certain hard discs have access times equalling ram speeds should I buy a larger hard disc (bigger than 20MB) and not worry too much about large ram expansion?

Finally have you heard of a domestic video which will enable me to accurately edit and sync my animatics with sound? Any help would be biblical in its proportion, may your seed to fruitful etc...

Simon Bunn,
Worthing, West Sussex.

You are talking serious money when dealing with editing video. And a domestic system probably won't be man enough for the job. No, not even one of the flash new S-VHS ones. Put your bank manager on danger money.

Animation needs ram. There are no problems with using the half meg internal expansion with an Amiga connected to an A590 and 2 meg. I do it all the time and would recommend this route. The A590 hard drive is a bit slow and small. Look at replacing the mechanism within the drive.

Video bods are wise to sync problems and have a protocol called SMPTE which can handle it. You are lucky in that there is a good dealer not far from you who understands these problems. Contact DigiPro on 0703 703030.

Born in the USA

SOME couple months ago I bought an American Amiga A500 second hand. Silkworm won't work. When I inserted the disc into drive, the drive spins, the screen goes red and the disc whirrs continuously.

When I tried to access it from Workbench the disc claimed to be unreadable. I have sent the disc back twice with no joy, and I know the software works on other Amigas.

I have been assured by many people that there is no difference between British and American machines, but there seems no other explanation as to why Silkworm does not load. Please can you help? Is there a chip that needs replacing? Surely it can't be serious, as all other commercial software works with no problems.

Tony Corvesor,
Kettering, Northants.

Many people are wrong. There are substantial differences between US Amigas and those used in the old world. The principal difference is that European (PAL) Amigas can display 256 lines in the non-interlaced mode while American (NTSC) Amigas can only show 200 lines. This means some programs will fall off the bottom.

Your local Commodore service centre can fix all this by changing some of the chips and crystals to translate a machine.

Sometimes a company only has the rights to sell a game in one country. To stop you calling America and ordering games you aren't supposed to be able to get here on your Visa card the software houses "fix" the game so that it will only work on certain nationalities of machine.

This may well mean that you'll have trouble with British software.

Beware bandits which byte

FOLLOWING your letter page section in the September issue, I feel that I must write in to warn Roger Fenton and any other readers who have bought Wizball.

Mr Fenton complained that after completing a level the computer locked up and you replied that this was because the game was an ST port. I suffered from an identical problem.

Then I got a copy of Virus X.

My Wizball disc was infected with the Byte Bandit virus, which causes the screen to turn black and the system to crash at various times – exactly the bugs that Mr Fenton described.

Don't ask me how the virus got there. I got the game with the tester pack when I bought my Amiga, and I saw the cellophane wrapping taken off the pack, so it could not be because the shop had used it for demonstration purposes or anything.

On a lighter note, after reading your section on buying discs, I get mine from a place called Midland Microsoft which are only £6.99 for 10. They also have a brand number on the back, and of the 20 I have bought, none have been faulty. Remember, *death* to all virus writers. Love the Jolyon Ralph Machine code tutorials. Keep up the great mag!

Jonathan Heron,
Gosforth,
Newcastle Upon Tyne

Overrated?

XENON II deserves high praise indeed, but I do feel that 100 per cent is over the top. A score of 100 per cent must surely signify perfection, and a game which one will be playing forever.

Although the game is quite amazing, I am sure that you will agree that the mark is unrealistic. So in future can you tell Jeff Walker to remember not to get car-

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ried away, and give more realistic scores.

David Fairweather, Blackburn, Lancashire.

OK, Jeff wants to know if you have problems with the 10,000 holes? His latest rating is for your letter. He gives it minus several million. If it makes you feel any better a couple of continental mags gave Xenon II 100 per cent as well.

Name that tune

DO YOU know if there are any PD discs containing an assembler source of a Aegis Sonix (SMUS) play routine? If you know about any could you please print which one in your mag and could you please also explain how SMUS files are stored? Thanks for an excellent mag.

Joel Hargen, Norway.

While there seem to be quite a few PD players for Sonix tunes – the program even comes with one – none of which include source. Since Aegis has gone into liquidation and disappeared down a plughole I can't think of anyone to call.

Box o' tricks

AT the moment I have an A500 with memory expansion which I bought in Germany. The problem is I want to upgrade to a B2000. I've been hearing rumours about a kit on sale in Germany which allows you to transform the A500 into a fully operational B2000 and wondered if in all your wealth of knowledge and experience (creep creep) you knew anything about it.

Dave Turnbull, Newbury, Berks.

Various expansion boxes are available; Bytes and Pieces sell the AX-S which takes Amiga 2000 and PC cards. For more details call them on 0253 734218. However as a rule the timing signals on the expansion boxes aren't as reliable as those on a proper 2000, so some card manufacturers, Microbiotics for one, aren't keen on them.

You really are best off getting a 2000 if you need to use add-ons.

Where in the world

I HAVE noticed that there is a bug in the Kickstart roms. Occasionally the computer boots up with the CLI screen in the NTSC screen mode, not allowing the display or mouse pointer go past line 200 and forcing you to reset.

All one has to do is to copy the program called reset from the c directory of the October disc of *Amiga Computing* to your Workbench disc and change the startup sequence to run it. Then if you boot up your Amiga one day and it has not booted up in PAL your Amiga will reset itself.

I think many Amiga owners are sick of commercial games coming out in the American NTSC screen format in England and Europe. We are stuck with a horrible black band at the bottom of the screen 56 pixels deep.

There have been documented methods of telling whether a machine is PAL or NTSC since it does not take all that much extra effort to program a piece of software that utilises the PAL Amigas.

Anyway, there is no excuses for software houses when the Kickstart 1.4 operating system comes out for Amigas, since it will have built-in software to detect whether a machine is NTSC or PAL.

Mr W M Liu, Morden, Surrey.

Quite agree. Although even when 1.4 does appear there are still going to be a million Amigas out there with 1.2 and 1.3, so this won't be a reliable way of telling where your Amiga is. P'raps they ought to fit them with homing beacons.

Pathetic printer

I RECENTLY bought an NEC PC8023 printer. However none of the printer drivers on Workbench 1.3 will work. I have tried to customise my own with a PD printer driver generator but was unsuccessful because of the very technical nature of the program and lack of data on the printer.

I wonder if anyone can help with details of where I could obtain a driver?

Garry Cogman, Norwich, Norfolk.

Give up. NEC was distinctly unhelpful. Companies which haven't heard of the Amiga I can sorta handle. NEC not knowing if an 8023 is a printer or a portable computer I cannot. The call did yield the information that the 8023 is a bit of an odd-ball and not compatible with anything decent.

From A to B

WHAT is the difference between the Amiga A2000 and the Amiga B2000? Can you get an Amiga 2000 with the ECS? I have seen an advert for the B2000 which has 1 meg of chip ram. Will most software on the Amiga 500 run on the Amiga B2000?

Chris Denman, Kingston Upon Thames, Surrey.

All 2000s are A2000s, but some are more equal than others. Commodore changed the design of the original (revision A) board (to revision B) and some dudes call these B2000s.

ECS is a two chip set. The first, Agnus, gives 1 meg of chip ram. The second, Denise, gives new screen modes when used with the (still) forthcoming 1.4 version of AmigaDos. So no, you can't get ECS yet.

The situation wouldn't be so confused if a sawdust-for-brains columnist in a weekly magazine hadn't got it all wrong. A few games don't scan the keyboard properly. This means they don't work on A2000s but the problem is quite rare.

Pondering Protext

READING the November article about printing from Protext we could not understand a word. For instance >OC – what is it? Where do you put it? How do you put it? We are no good at programming and do not understand much that is written in your articles, so please think of those less fortunate and explain things step by step in easy to follow instuctions.

Also could we have more short listings to type in demonstrating the Amiga's potential. We have found in the past that copying listings helps us to understand Basic programming much more easily.

Richard Gray, Norwich, Norfolk.

Go and make a good, hot, strong cup of tea. While the kettle is boiling take another look at the November article. OC stands for Output Character. This sends a number to the printer. It could produce a letter or make the printer go into a special mode.

Try the example on page 96. What happens? Small letters right. Now sit down at your Amiga, drink your tea and work through the article slowly.

Virus victim?

WHEN I borrow software from my friend I load it up to see black lines and dots come up on my monitor. I looked it up on my virus killer. Nothing came up and only sometimes it comes up with black lines. Could it be a virus? What is the best virus killer I can get? If you kill a virus from the memory can it still be there? If I could not get rid of it what would I have to do?

Alan Young BFPO 114.

Hmmm. Sounds much more like a hardware problem to me. I suspect you have a sick Denise custom chip. Do the lines look like those on page 89 of the September issue?

If you are feeling brave, and the machine is not under warranty,

New crew

I have been reading your articles and have progressed very far. I have learnt so much from them that I have almost finished my very first Amiga demo. Our newly-formed crew is called Meltdown the members are: Coding – Club 2000 (me!), Music – Art'n' Image and Conz, Grafix – Art'n' Image and H-Angel, Spreader – Bruno.

Duncan Chambers, South Shields, Tyne and Wear.

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you could open it up and make sure all the chips are properly seated in their sockets by giving them a gentle push. Otherwise take your Amiga to a computer doctor who will make it better for you.

Tired mouse

IN his letter in the November issue V.S. Kirby's said that if you put a 1mm piece of card on the leaf contacts in the mouse this will improve the button's response. This is all right for a while, but eventually the paper wears down and so the buttons become unresponsive.

Ian Wickham, Cheshunt, Herts.

Fun for four

Corporal Elsdon had a query about Gauntlet 2 last month and I have the answer. I have got Gauntlet 2 and I bought a four player adaptor from Softsellers (0473 257158/210605) for £5.95. All you have to do is plug this into the parallel port and then you can play with four players.

Jerry Spencer, Mill Hill, London.

Great, thanks now he and his friends can rush around mazes, killing monsters and shooting at each other. Which will make such a change from his day job.

Tall order

I OWN a 1 meg 500 with a second disc and shiny new Star LC24-10 printer. Please could you recommend a good piece of DTP software, for less than £350, which fulfils most of my requirements.

It must be used as a wysiwyg word processor and print out 24-pin quality art and graphics in a similar way to the Protext signature in the November issue. I need to print out results like those obtained from X-CAD Designer, reviewed in the July issue with fonts in all sizes and styles, making the best use of the 24 pins.

Brian Buckley, Huddersfield, West Yorkshire.

Wow, you want a lot out of a program. Using any DTP program as a Wysiwyg wordprocessor is going to be painfully slow. And it isn't really the right solution to the problem.

Pagestream might do what you want but the last version the experts here saw (a while ago mind) was buggy and oh, so slow.

ProPage 1.3 has not yet come in for review, but is reputed to have top notch dot matrix printer support. Call the importers, HB Marketing, on 0895 444433 and see what they have to say. It's the one I'd go for.

Shame you want something easy to use 'cos TeX gives the best results – after six months learning to use it.

Happy memories

WELL this is the fourth issue of *Amiga Computing* I've bought, and so far you seem to be maintaining a high standard. Now, on to the serious stuff. I've already figured out that the half meg provided with the machine is woefully inadequate for serious use, so I now face the expense of a ram upgrade.

Looking through the mag I noticed Third Coast Technologies advertising a 1.8 meg internal board, and I've seen other companies with the same sort of thing. However, before I splash out and buy one, is it safe?

Can the A500 provide enough power for the extra ram without overloading? Where would the extra ram fit into the memory map? Is a battery backed up clock worth the extra money? Will the new super Agnus chip be able to recognise one of these boards as chip ram and use all or part of it for programs?

Cecil Banks, Southampton, Hants

Safe is not quite the right term. And it depends on your system. Commodore says an Amiga is OK with an extra 512k and disc drive. But means one of their massively power hungry floppies not the nice efficient drives folks like Evesham sell. So there is a fair stack of power left over.

You'll need to find out what chips the expansion you are interested in uses but I can't think that there will be any problem. It might run a bit warm. A battery backed up clock doesn't cost much and is well worth having.

The super Agnus (American Tourist or FANG2 as some call her) can access 1 meg of chip ram but you will need to cut some tracks on the board. Use a sharp knife and get a grown-up to help you..

Lost adventure

WHAT has happened to the brilliant adventure section you had? It was great and informative, but now there isn't a trace of it in your magazine. Is it possible to buy the discs from back issues separately or would I have to buy the magazine as well?

Can you please advise me on whether I should buy a second disc drive or Commodore's 20 meg hard drive? I would like both, but at the moment I can only afford one of them. I already have a ram expansion.

One last thing. What happened to the review of Beach Volley last month? It was listed among the games that were reviewed but the review did not appear in the magazine.

Graham Hy, Blackhall, Edinburgh.

We didn't get enough mail about adventures. Perhaps if we get more requests from people like you we could start one up again. Discs from the August to January issues are available at £1.50 each from Protoscan Ltd, Amiga Computing Cover Disc, Burrel Road, St. Ives, PE17 4LE.

A second floppy drive costs about £70, a hard drive £400. They aren't really comparable. If you can afford it go for the hard drive. Well done on spotting the Beach Volley mistake. There wasn't room to squeeze it in when we came to put the magazine together. It shows you read the mag very carefully.

Sharp eyed

I READ your excellent magazine, the November issue, for the first time the other day. Your games reviews are very good, but whatever happened to the Beach Volley review? Was it perhaps zapped by aliens, or was it just left out to encourage readers to read the magazine from cover to cover? If so, do we really need any encouragement?

Terence McGrath, Fairfield, Liverpool.

Not bad, not at all bad. There is nothing for it. I'll have to send you a prize for observation.

Red letter day

YOUR disc should have solved my problems as I do a lot of word processing using only the CLI Ed facility. But I was disappointed to find the Protext version on the September's free disc would not print out on my Star LC10 colour printer.

I have tried every printer selection possible, even altering the DIP switched, but to no avail. Is this because this version will not drive this particular printer or because my Amiga A500 has insufficient memory to use the program?

If is has insufficient memory, does this mean the full version of Protext would also be unusable without a memory upgrade?

Susan Kirke, Sunnyside, Newcastle Upon Tyne.

The LC-10 colour is quite capable of producing black and white type. Use the Epson driver and set the switches to the Epson settings and all should be tickety-boo. Arnor does supply a version of Protext which works in 512k but for serious use you should get an extra half meg.

Get knitted!

I'VE found a wonderful program which I thought you might enjoy (see enclosed package). It is easy to use and produces beautiful results. However, it is not fully Amiga compatible, so I have also sent

Open chequebook, and repeat after me...

UNTIL recently I have had no problem with my internal disc drive. Approximately two months ago I started to get requesters saying that the disc in df0: had a read/write error.

When I used the CLI command info there would be a number in the errs column. The unusual thing is, when I put the same disc in df1: and type info, no number appears in the errs column.

Do you have any idea what could be causing the problems, as the drive is so bad I cannot boot up sometimes.

Simon Colley,
Camberley, Surrey.

I, too, have a similar problem. It is the sign of a dying drive. And it is a real downer. Shop around for repair prices. Shield Computer Services in Manchester seem pretty reasonable guys at 55 quid flat rate. Call them on 061-747 3185.

➤

some pieces of hardware that you might find useful. Have fun and enjoy yourself. (Oh by the way, I have assumed that you have grasped the art of knitting from trying out a few of your own stitches and patterns.) Let me know how you get on!

I have actually assumed that you can't knit, but hope you now know how I feel when I read articles such as Through the Square Window, AC Vol 1 No 9. Before buying my Amiga I was totally computer illiterate. By now I have just about learnt my alphabet and am having a go at 2 and 3 letter words.

Please could you run a regular spot for complete beginners, or at least provide a glossary of terms and abbreviations.

I have found the process of learning a very frustrating experience, the manual provided with the A500 is good in places but just doesn't work in others.

I am reluctant to buy books which are expensive, without being sure they are any good. Libraries don't have any for the Amiga, and magazines such as yours are written for people who know what they are doing. Software comes without instructions or with very poor ones – they frequently assume you know how to play the game. Please help the beginners.

Anne Scotney,
Loughborough, Leics.

Thanks for the needles and wool. No, I can't knit, but they made fine improvised chopsticks for gobbling susi. And they made your point brilliantly. When you live and breath Amigas all day, every day, it is often easy to forget that there are new users.

And it is for you that we have provided this month's free booklet. I hope you enjoy it..

Little letter

THE Protext demo has turned out to be one of the most useful programs I have. Although not one of the friendliest ones around, it is quite powerful. I've managed to create a small but useable dictionary, and I'm quite pleased.

The 2k limit seems to have been just as helpful. I use Protext solely for writing letters to computer magazines, and I usually tend to write long stories instead of going straight to the point. The 2k limit doesn't let me do that (lucky for you).

The only really annoying faults are Protext's inability to cope with file names containing spaces in its catalogue mode, and that it doesn't work with a Workbench more than 640 pixel wide.

Eyal Teler,
Jerusalem, Israel

Yes, keeping your letters short is great, it doesn't help when you send five in each envelope.

Serial sergeant

I'M the proud owner of an A500 (well my wife is). The problem is I have a printer which I have used with a Tandy. The printer is a Tandy DWP-210 daisywheel which worked perfectly with the other system.

As the printer was very expensive I would like to use it on the Amiga, but cannot seem to get it to work. Could you please assist me with this problem? What cable connections?

Sgt B V Matthews,
RAF Gaton BFPO.

The printer is a straightforward Centronics, so a PC printer lead should work perfectly well.

Good dealer

I write to sing the praises of one of the companies that advertises in *Amiga Computing*. At the Commodore show I bought a Micromegs ram expansion. A couple of months later my son bought a game that refused to work with the expansion module in, so I removed it and afterwards could not get the computer to "see" it.

When I rang MAST, the person I spoke to was Mr Tony Thompson who made it quite apparent that he was committed to customer service. Not only did he arrange for an immediate replacement to be sent (trusting me to return the faulty unit), he actually sent several goodies and the latest specification board with an external disabling switch.

Graham Callaghan,
Christchurch, Dorset

High TeX price

SOME of your readers might be familiar with TeX, the mathematical typesetting package that is available in the public domain for the likes of the PC, Atari ST and so on.

I am therefore wondering why TeX only seems to be available for Amiga owners if they are prepared to spend £125? Is there a genuine PD version of TeX that I don't know about?

Seekers of high quality branded discs could do worse than going along to their local university's computer supplies. Edinburgh University sells Sony discs to non-students for 65p each.

Stephen J Richards,
Barnton, Edinburgh

While the TeX compiler is PD the fonts and printer drivers are not. There is a version without the drivers – but with a screen previewer – on a Fish disc.

The version The Text Formatting Company (01-806 1944) sells represents a lot of additional work.

Watching the defectives

THERE seems to be so many different types on the market, all offering different features. Monitors I mean.

I understand that Commodore has stopped making the stereo 1084S monitor and replaced it with the old mono 1084. What is the difference between the Philips CM8833 and CM8832 models? Is the CM8832 capable of accepting stereo sound? Which monitor do you recommend?

Well the answers to some of those questions may seem blindingly obvious to you, but to me they pose a problem, and I'd value your help with them.

Stuart Lawson,
Ulverston, Cumbria.

The line about the 1084S being stopped has a high BEI. I suspect it comes from a salesman with a lot of old stock to shift. Whatever you buy don't buy it from him. It isn't true.

Philips makes the monitor in the Commodore box so there isn't much to choose between the 8833 and 1084S. Buy whichever is cheaper. BEI? Oh, Bovine Excrement Index.

Michael Jackson competition

THE answer to the Michael Jackson Moonwalker competition question "Who is he and what is the name of the film" is, of course, Jeff Walker (is this the one from the Walker demo?) NO???? What do you mean – NO!!!! Oh, you said Moon-walker. Well, sorry about this, but I just didn't know where to write.

Couldn't you say 'write your letters to magazine to find an address which looks right. And could you please write the name of the product you're reviewing on the contents page. I often search for a certain review through my magazines, and it helps greatly if I can see it on the contents page.

Eyal Teler,
Jerusalem, Israel

Hey, hang on a sec already, this is your third letter this month. Are you making a bid for a take-over? I do put my address on the letters page. You want I put your address at the top? Eyal Teler's Postbox perhaps? Even though you got the answer to the question wrong we put your entry in the correct entries box, and sneaking a look over Jeff's shoulder at the winners list I noticed that you were one of the winners.

Bugs or broken?

PLEASE could help me with two problems. The first is that our unexpanded Amiga A500 is unreliable. We have sent it away for repair with only a slight improvement. Please could you tell me if the following faults are normal.

- **Workbench 1.2 can be crashed by putting files into Ram disc.**
- **Protext develops errors, such as not enough memory to sort files, disappearing menus, and numerous Guru messages. All these happen after you incur a system (usually disc) error.**
- **Amiga Basic also crashes quite frequently.**

There are a few other problems, but these are the most frequent and troublesome. Have you any suggestions for the best course of action to solve them.

The second point is that I need a good budget Eprom blower and assembler for the Z80 series. I hope to be able to create software on the Amiga to run in a separate Z80 system. Any advice you could give would be much appreciated.

Sam Hugh,
Wigan, Lancashire.

Only one of your faults is normal. AmigaBasic crashes if asked to do anything moderately taxing. The solution is to call Hisoft on 0525 718181 and order a copy of the Basic compiler. While you should upgrade your Workbench 1.2 to 1.3 – if only to get the excellent manual – there is no reason why 1.2 should give you problems and neither should Protext, so I'd advise you to take the machine to a dealer who can run some tests on it.

Most Eprom blowers accept serial input, although I can't find any details of an Amiga-specific one. A friend has been looking for a Z80 cross assembler for a while and the best solution he has come up with is to use the public domain CP/M emulator and run a Z80 assembler under that.

Seventeen Bit Software on 0924 366982 should be able to furnish you with the emulator.

Time warp

BROWSING through back numbers I came across a couple of points which may be of interest to you and readers. In an article about a fancy monochrome high-res monitor, Simon Rockman implies that there is a problem in getting Protext to fill an interlaced screen with its default window. I use a flickerfixer and a Multisync II and found this problem too.

However, I contacted Mark Tilley (the author of Protext) at Arnor and almost by return of post he sent me a 'fixed' version which will produce a full window on an interlaced screen. I am writing this on such a screen which gives me nearly a full A4 (some 50-odd lines).

Used on a monochrome long persistence monitor, the window is slightly larger than can be attained with the Multisync. While not exactly in the Viking league, this version puts Protext streets ahead of any opposition, IBM or otherwise, for the price and gives credit to Arnor for prompt responsiveness.

Secondly in your letters page, Keith Stark of Bury St Edmunds, had a grumble about the Beebulator in that it couldn't be copied. Well, that may be, but it can be installed on a hard disc.

I have played about with one for about three months and was not aware of the copy- protection. I just installed it. I can't recall how I did it but I can assure you it works. Sorry that these responses are a bit late, but I trust they are useful comments.

John Stanley Wistaston,
Crewe.

Time and tide wait for no man. And while they are waiting the rest of us get around to some de-bugging. It was as a direct result of Simon's review and a number of messages on the truly wonderful Cix modem service, that Arnor fixed Protext. When the article was written the statement was correct (honest your honour).

The same is true of the Beebulator. The first 1,000 copies were protected. But thanks to several complaints, of which the letter in Amiga Computing, was one, Commodore changed to an unprotected version. And that is what you buy today. Well done, Commodore.

Compatibility crisis

WHEN I bought a copy of War in Middle Earth and I was most disappointed to find that it wouldn't load. It was my memory expansion which was causing the problem. I had believed that this problem only existed in older games written before expansions became popular. Apparently not!

A further problem was caused by my A590 hard disc which grabs some memory on startup. This was solved by disabling the autoboot roms.

Now Silkworm works perfectly without all this bother, as do a number of other games so the problem is not insoluble. How about introducing a compatibility guide as part of the usual ratings roundup? This would enable those of us with extra ram to avoid buying such poorly written software and would put pressure on software houses to tackle this annoying problem.

On the serious software front, how about a series of reviews comparing the best in various categories. No prizes for guessing which word processor would win. Just how much are Arnor paying you for all the publicity? Over the top or what!

Mark Hadley,
Fulford, York

Testing everything on all configurations of machine with different roms, quantities of ram and peripherals would take forever. Commodore Technical offers software houses a testing service, but since this takes a day for each program and we review more than 20 programs a month it would not give the people caged up in the review room time to write or play the games, – although some other mags don't seem to bother with playing their review copies –, so here is my guide to what works as a rule:

Everything which should, works on a vanilla A500 except Timescanner (and that is the kinda thing our guys spot). Add an extra drive and you may need to unplug it for some programs. Add memory and you may need to unplug it for some very naughty games.

Club 68000 does an expansion with a switch which is dead useful. There are some programs which will do the same thing. KillFastMem on the October cover disc is one.

The richer you get the more grief you gonna have. 'Tis true that money can't buy happiness. Hard drives gobble ram and have autoboot roms again most programs can handle this unless they expect to sit in a specific area of memory. Anything from America should be kosher, stuff from Germany is suspect.

Buy a 2000 and you really have rich kid problems. The keyboard timing is different. Now there is a proper way to scan the keyboard and "the way which works on my A500". Listen to what the man says and the program will work.

This is the second most common compatibility problem and as so few people play games on A2000s it isn't a mega worry.

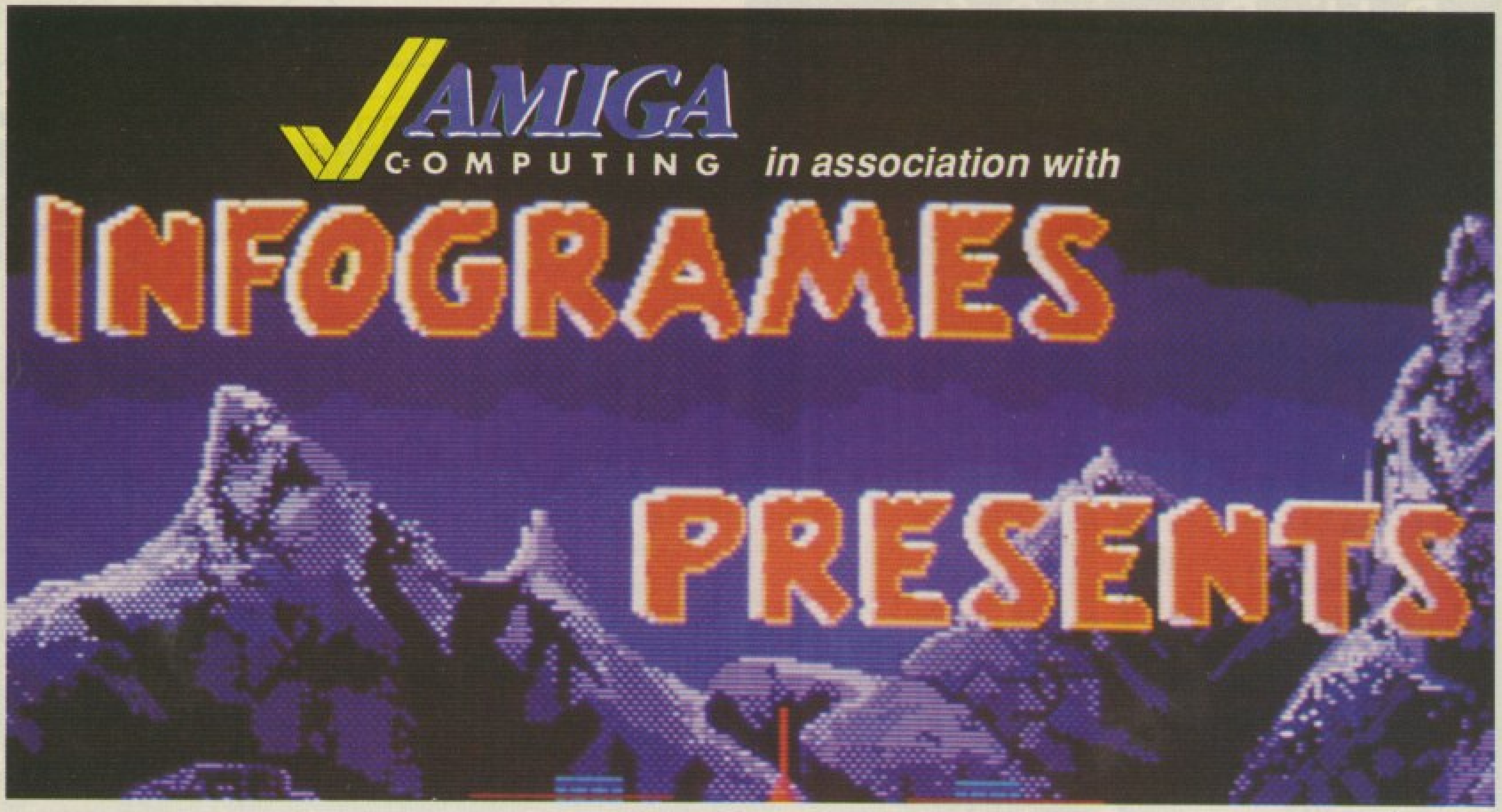
So what wins the prize for being the hardware most programs hate? It is the add-on processor. The 68020 and 68030 have a little bit of memory inside 'em called a cache. This reads chunks of program ready for the rest of the chip to run.

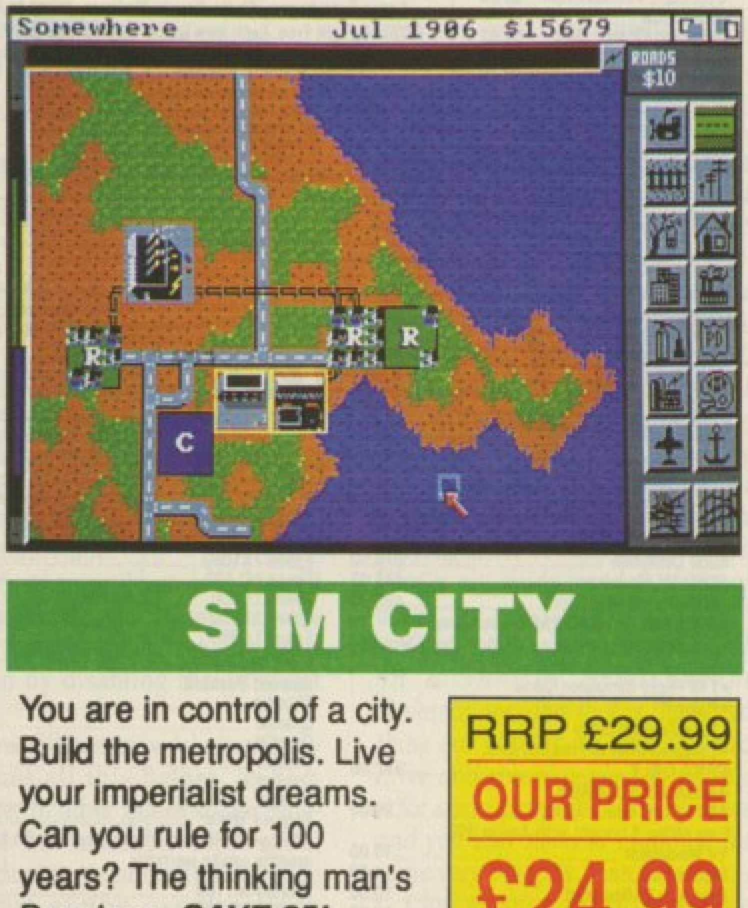
So if the chip changes the chunk in proper memory after it has been read the chip doesn't get to hear of it, and everything falls in a heap.

This is called self-modifying code. This is a no-no. Partly because it causes problems and partly because it is frighteningly difficult to debug. Sometimes programmers want to write unreadable code, particularly when working on disc protection routines. Otherwise the crackers wouldn't have a challenge. So the protectors use self-modifying code.

This is really annoying because it means that games which would run much better on a faster Amiga won't even load.

I like the idea of serious roundups, but then who am I to make policy decisions? I pass it on to the powers that be.





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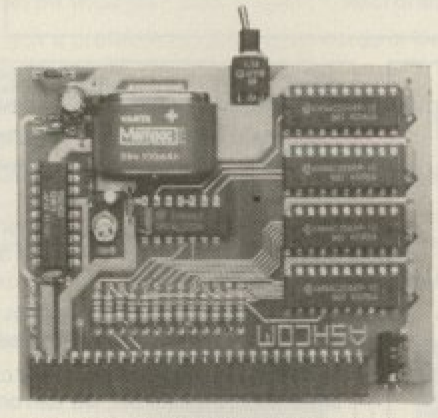
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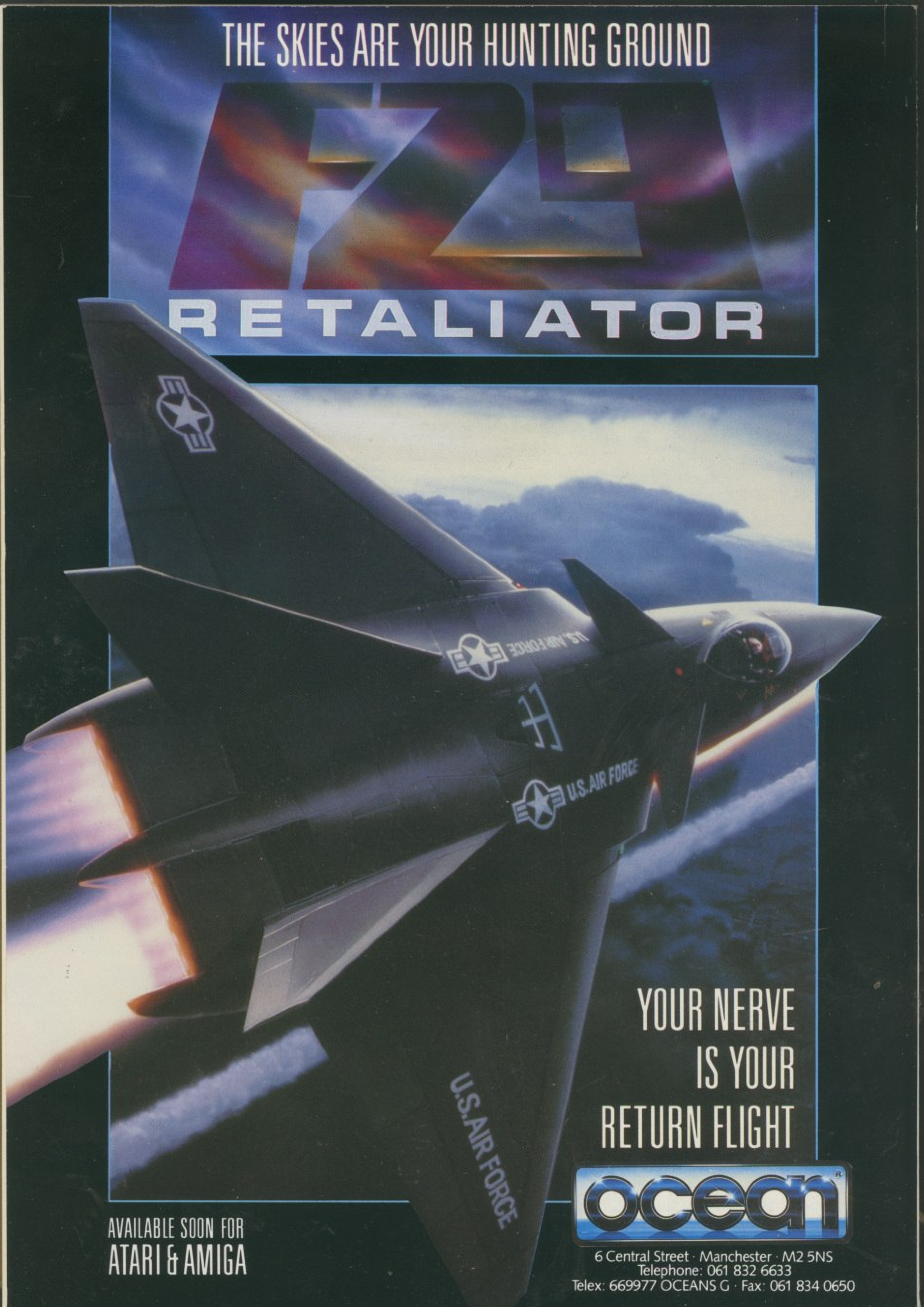
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